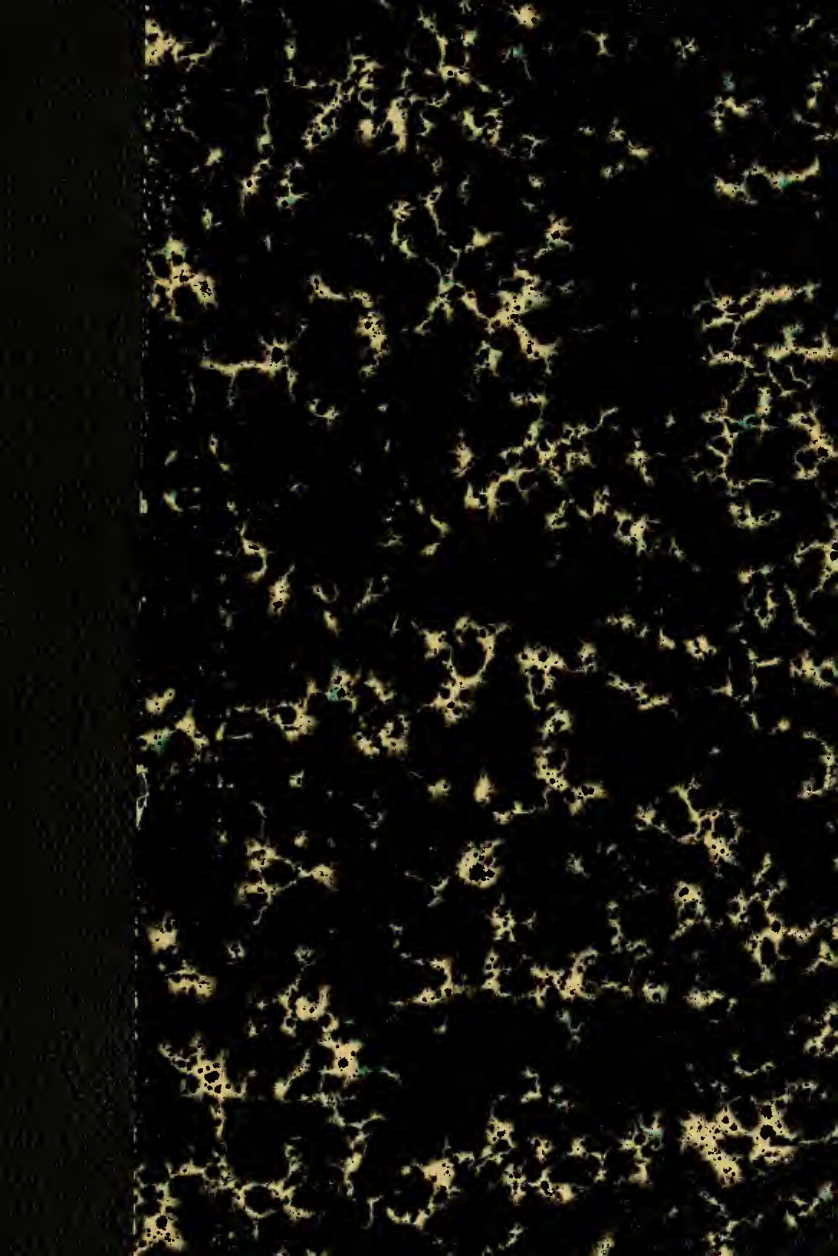

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NATURAL HISTORY TRANSACTIONS

OF

NORTHUMBERLAND, DURHAM,

AND

NEWCASTLE-ON-TYNE,

BEING PAPERS READ AT THE

MEETINGS OF THE NATURAL HISTORY SOCIETY

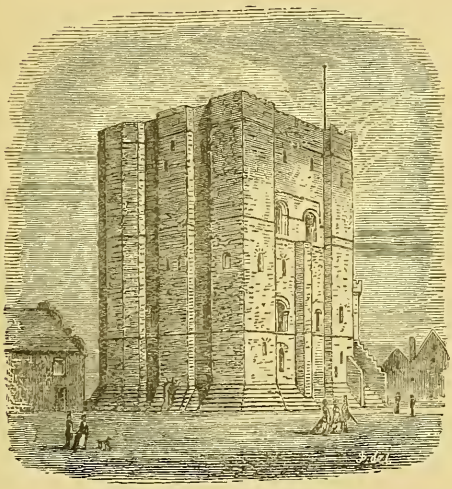
OF

NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE,

AND THE

TYNESIDE NATURALISTS' FIELD CLUB,

VOL. XIV.



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1903.

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ERRATUM.

Page 196, line 9 from bottom :—For "1890 and 1891," *read* "1900 and 1901."

CONTENTS OF VOL. XIV.

PAGE

I.—Natural History Society, Annual Report for 1897–98..... 1

II.— ,, ,, ,, for 1898–99..... 29

III.—On Copepoda and other Crustacea taken in Ireland and on the North East Coast of England. *By G. Stewardson Brady, M.D., LL.D., D.Sc., F.R.S.* Plates I–IV. ... 54

IV.—Biographical Notes on the Early Botanists of Northumberland and Durham. *By J. G. Baker, F.R.S., F.L.S.* 69

V.—Report on Dredging and other Marine Research off the North East Coast of England in 1901. *By G. Stewardson Brady, M.D., LL.D., D.Sc., F.R.S.*..... 87

VI.—Miscellanea.—Note on *Neomenia carinata?;* Note on *Echinoderes; G. S. Brady.* Local Notes on Birds, 1901–02, *E. L. Gill*..... 102

VII.—Address to the Members of the Tyneside Naturalists' Field Club, May 10th, 1901. *By Thos. Thompson*..... 105

VIII.—Natural History Society, Annual Report for 1899–1900... 126

IX.— ,, ,, ,, for 1900–01..... 151

X.—Address to the Members of the Tyneside Naturalists' Field Club, May 2nd, 1902. *By W. Mark Pybus*..... 169

XI.—An Explanation of the Claxheugh Section, Co. Durham. *By D. Woolacott, M.Sc., F.G.S.*..... 213

XII.—Natural History Society, Annual Report for 1901–02..... 222

XIII.—Address to the Members of the Tyneside Naturalists' Field Club, May 1st, 1903. *By W. Mark Pybus*..... 241

XIV.—Miscellanea.—Ballast Plants at Bradbury, Co. Durham, *Edward Potts.* Hooded Crow in May, *W. Mark Pybus*..... 283

LIST OF ILLUSTRATIONS, VOL. XIV.

PLATES.

Illustrations of Prof. G. S. Brady's paper on Crustacea from Ireland, etc. (p. 54).

Plate I. Ameira amphibia, Cyclops eboracensis, Pseudothalestris monensis.

,, II. Laophonte subsala, Paratachidius inermis.

,, III. Dactylopus platycheles, Pseudothalestris monensis.

,, IV. Monstrilla grandis, Harpacticus gracilis, Paratachidius inermis.

TEXT FIGURES.

Illustrations of Mr. D. Woolacott's paper on the Claxheugh Section (p. 213).

Page 211. Photograph of Claxheugh Rock, looking east.

,, 212. Section of Claxheugh Rock.

,, 215. Photograph of disturbed masses of Compact Limestone and Breccia.

,, 216. Detailed Section of termination of Marl Slate and Lower Limestone.

,, 219. Photograph of termination of Marl Slate and Compact Limestone.

,, 220. Ideal Section of western end of Cavern.

MAR 24 1903

5363.

NATURAL HISTORY TRANSACTIONS OF NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE.

VOL. XIV.—PART I.

PRICE THREE SHILLINGS AND SIXPENCE.

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1902.

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MAR 24 1903

NATURAL HISTORY SOCIETY

OF

NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE.

ANNUAL MEETING, 21ST SEPT., 1898.

REPORT FOR 1897-98.

THE labours of the Committee during the past year have been directed chiefly to the following subjects:—

The admission of a class of Associates to the benefits of the Society and the consequent alteration of some of the rules; the administration of the Hancock Prize Fund; and the condition of the roof and upper portions of the walls of the Museum Building, which the Committee much regret has required their long and serious consideration. To put the roof, etc., into a proper state of repair will entail a considerable expenditure of time and money. An appeal has been made to the members and general public for subscriptions, and the Committee have pleasure in stating that through the liberal donations of the influential members and friends of the Society they hope now to realise the funds required to undertake the needful repairs of the building and the entire reconstruction of the glass roofs.

ASSOCIATES.—In the last report a short account was given of the proposed alteration of the Rules of the Society to enable the Committee to admit a class of Associates who, at a reduced subscription, are to have the advantage of visiting the Museum and attending the public meetings of the Society. Such Associates are to consist of those whose

income does not allow them to subscribe the full amount paid by ordinary members, and children of members under 21 years of age, and who are more or less interested or practically engaged in some Natural History pursuits. The alteration of the Rules was proposed and carried at a Special General Meeting held in March, 1897, and was confirmed at the last Annual Meeting of the Society. Under the new rules twenty-one Associates have been elected.

Hancock Prize for 1897.—In response to advertisements in the local newspapers six Essays were sent in before July 31st, 1897. By resolution of the Committee the Rev. Canon Tristram and the Rev. Canon Norman were appointed examiners to award the prize. The examiners decided that the prize of Five Pounds value should be awarded to Mr. Robert Wm. Ellison for his essay on a "Ramble over Prestwick Car." The Rev. Canon Norman very kindly gave an additional prize of £1 to Miss E. Spencer Hick for her essay entitled "A Ramble in the Isle of Lindisfarne," which was considered by the examiners as second in merit. Mr. Ellison chose a Camera of the value of the prize gained, in accordance with the rules for the administration of the Prize.

Repair of the Museum Building and Roof.—For many years it has gradually become known to the Committee, from the information of officers, and others who have been engaged in almost yearly repairs to the roof, that some extensive work would sooner or later have to be done to secure the building and the collections from serious and irreparable damage. As it was found that the constant repairs required to be done after almost every gale of wind were not sufficient to remove the dangers threatening the whole roof, the Committee resolved to ask Mr. Rich to give a full and exhaustive report on the state of the whole of the roof and other parts of the building and the work necessary to be done to protect the building from more serious injury. After a full and careful examination of the roof and other parts of the Museum Building, Mr. Rich presented the following report for the consideration of the Committee.

Report to the Sub-Committee on the condition of the Museum, and approximate cost of putting it in a fair state of repair.

GENTLEMEN,

Since meeting you at the Museum on the 19th ultimo, I have made a further examination of the building as to its present condition.

My report dated the 5th ultimo, addressed to the Secretary, indicated the least that should be done in repairs; but at the meeting held on the 19th ultimo, I was asked to report the approximate cost of putting the whole building in as thorough a state of repair as circumstances will admit, and have therefore taken a more comprehensive view of the matter, so as to place before you what, in my opinion, is the real state of affairs. You will then be able to determine whether the whole or part shall be carried into effect.

There appears to be two causes which may account for the present bad state of repair (1) a want of skill in construction, and (2) a want of good quality in some of the materials used.

The following remarks apply generally to the whole building, except the western side :—

The condition of the stone and brickwork in the upper part of the walls is one that should occupy the early attention of the Committee, as soon as ever the weather is favourable to admit of the work being carried out. The mortar, with which the walls have been built, has been of a very poor description, and has disintegrated and fallen away, leaving in many cases the joints quite open. Many of the joints are over an inch in width, and all of such a nature as to admit rain, which will tend to deterioration, and if allowed to go on will lead to very extensive restoration. Many of the bricks behind the parapets have decayed, and fallen away, and all the lead flashings require sinking deeper and repointing. The whole of the joints in stone and brickwork in the parapets, and the tops of the cornices, must be pointed or grouted.

There are also many vertical joints open in the face of the building, that, in their present condition, are detrimental, but owing to the difficulty of now being able to fill them up

without disfiguring the building, it is I am afraid almost impracticable.

A deal of the leadwork requires adjusting, and nearly the whole of the flashings require refixing.

The rain water spouts from the gutters of the East Corridor, and the South Front, I notice, all descend down the inside of the building. This is a very bad plan indeed, as there is never any telling whether the spouts are doing their work; whether they are not stopped at the foot by accumulation of corrosion falling from the inside of the spouts, and water leaking into the walls. I am afraid also they join the sewers direct, as when I made my examination, I noticed steam arising from the head of the spouts in the gutters, and a very bad smell emanating from them; looking to the hollow condition of the walls, the outlook, from a sanitary point of view, is not a cheery one. I could not verify this without pulling the place to pieces, but from enquiries I have made I believe it to be fairly correct. In any case, these spouts should be placed either on the outside of the building (as they should be) or the feet of the spouts opened out and severed from the drains by an intercepting shaft.

The water closets seem to be in the same condition; they should be fitted with the intercepting shafts in the same manner.

The slating has been badly used, and will require some repairs; wood ladders should be placed at intervals, so as to avoid walking on the slates. Some of the wood trellis snow boards in the gutters require renewing.

When on the roof I carefully examined the lantern lights, as I know the trouble they have caused by their leaking badly. They consist of wood sashes, the bars of which at some time have evidently been found to be weak, as they have been stiffened, but owing to the narrowness of the bars the rebates for the glass are shallow. The lower sashes are fitted in between dividing uprights, with wood cappings covering the joints; there appears to be no provision for condensation in the lower tier.

In looking at the underside of the lantern lights in the roof, the leaks are most abundantly in evidence in every direction. It was a very dry day when I made my examination, but there was water yet standing on some of the squares of the horizontal ceiling light, which had fallen from the skylight, and there were scores of other marks—then dry. The main timbers and sarking must have been soaked frequently as the many stains on them testify. After giving this matter my careful attention, I am reluctantly forced to the conclusion that there is no "half way house" in the matter. If the lantern lights are to be mended, they must be mended with new ones. They are too weak and too composite, and made on a bad principle. The timbers of the roof also require stiffening, and gutters for condensation must be formed inside.

Coming to the plastering of the inside walls of the Museum, but chiefly the Eastern Corridor, the mortar is found to be quite as bad as that before mentioned, and so much so, that, in at any rate the Upper Corridor, the ceiling (which has dropped off in places) must be either taken down and renewed, or sheets of plaster slabs screwed to the present ceiling. This will also apply in part to the Staircase in the North East corner. There are also many repairs absolutely necessary, in the Staircase at the North East corner, and it should have a cement skirting to prevent the plastering being constantly broken away.

The ceilings and walls generally (excepting the Committee Room, etc.) are in places badly spotted, partly by the roof leaking, and partly, I think, the result of condensation. The ceiling of the South East staircase is a notable instance. The effect of this is to give the Museum a dilapidated appearance. I would recommend that the walls be coloured, and the ceilings whitened, and although these may be said to be sentimental repairs, yet they would very much add to the attractiveness of the Museum.

I think the question of condensation is one that should receive attention. Since the last addition was made to the

hot-water piping, the condensation has been much lessened, especially in the Staircases. In the absence of a definite system of ventilation, some means should be adopted of admitting air to the rooms. The windows are not of a convenient form to ensure their being opened. I have on previous occasions suggested the propriety of having smaller opening ventilators in the windows that could be easily worked, and I see nothing at present to alter that opinion.

In recapitulating the matters before mentioned, we may divide them into two classes (1) those absolutely necessary to be done for putting the building in a fair state of repair and (2) those for finishing the interior.

To the first class belong the repairs to the stonework, the adjustment of the leadwork, the repairs of the slating, the new lantern lights, new snow trellis, the rain water spouts, the new ceilings and repairs to plastering, the ventilators; and to the second class, the colouring of the walls, etc., the drains to the w.c's., etc.

I estimate the approximate cost of the first at £1,848, and the second at £130. The amount is no doubt a very large one, and one you may not be in a position at present to face, but the work may, if you think fit, be done piecemeal; for instance, the most pressing matters might be undertaken first, viz., the repairs to Stonework, Leadwork, Slating, Plastering, Ventilators, and colouring the interior walls. This could be done for about £385, leaving the rest (of which the lantern lights form the greater part) to be carried out at some future time.

I need hardly tell you how much I regret to have to make a report of this nature, on a building such as the Museum, which should scarcely at this time have cost the Trustees a penny in repairs.

I am, yours faithfully,

FRANK W. RICH.

1, Eldon Square, Newcastle-on-Tyne, 7th December, 1897.

As soon as this report had been carefully considered in Committee, it was resolved that a printed copy should be sent

to every member of the Society, and that a Special General Meeting of the members should be convened as soon as possible. This Special Meeting was held on the 14th March last, when W. A. Watson-Armstrong, Esq., most kindly consented to preside. The Report having been read and duly considered, on the motion of the Chairman it was resolved "that an appeal be drawn up by the Secretaries and issued to the members and the public asking them to subscribe £2,500 to enable the Museum Building to be put into a proper state of repair."

At this Meeting the Chairman announced that Lord Armstrong would be pleased to head the list of contributions to this fund with £500, and that he himself would have the pleasure of subscribing £250. Other contributions ranging from £25 to one guinea were promised at the same time, amounting to more than £800. Through the kind exertions of the Chairman, this sum is now increased to over £1,800, contributed chiefly by members of the Society.

In accordance with the above resolution the following circular was issued in the first instance to the members of the Society, and afterwards to the most influential inhabitants of the three Northern Counties, but up to the present time the Committee regret that the appeal to the public generally has met with only a slight response.

The Committee desire to emphasize the fact that the full sum of £2,500 is absolutely and urgently needed. £800 is still required, and they earnestly ask the co-operation of the other members of the Society in assisting them to raise the requisite amount.

NATURAL HISTORY SOCIETY OF NORTHUMBERLAND, DURHAM, AND NEWCASTLE-ON-TYNE.

Museum, May 2nd, 1898.

For some time past it has been evident that portions of the walls, roofs, and main timbers of the Museum Building have been in a very unsatisfactory, if not dangerous condition, and

the Committee consequently obtained from their architect, Mr. F. W. Rich, a careful survey and report, from which it appears that a sum of about £2,500 is imperatively needed to put the building and roof into such a state that the valuable collections will be safe from the dangers to which they are at present exposed.

The Museum of Natural History contains most valuable and interesting collections, which have been for more than half-a-century used by very large numbers of people from all parts of the Counties of Northumberland and Durham, and the Committee feel that the condition of the building is a matter which interests everyone who lives in these counties, and they appeal confidently for the support of the general public as well as of their own members.

We subjoin a list of the donations which have already been promised privately towards the repairs.

	£	s.	d.
Right Hon. Lord Armstrong, C.B.	500	0	0
Mr. W. A. Watson-Armstrong	250	0	0
Sir Andrew Noble, K.C.B.	250	0	0
Mr. W. D. Cruddas, M.P.	100	0	0
Mr. C. W. Mitchell	100	0	0
Mr. R. Y. Green	25	0	0
Mr. H. N. Middleton	25	0	0
Mr. J. W. Pease	25	0	0
Mr. Clement Stephenson	21	0	0
Mr. Geo. E. Crawhall	20	0	0
Mr. W. F. Henderson	20	0	0
Mr. N. H. Martin	20	0	0
Col. H. F. Swan	20	0	0
Mr. John A. Woods	20	0	0
Dr. C. J. Gibb	10	10	0
Mrs. Edward Joicey	10	10	0
Mr. James Hall	10	0	0
Mr. John Pattinson	10	0	0
Mr. Jos. H. Straker	10	0	0
Mr. Thos. Thompson	10	0	0
Mr. Wm. Cochrane	5	5	0
Dr. G. H. Philipson	5	5	0
Mr. E. J. J. Browell	5	0	0
Mr. Robt. C. Clephan	5	0	0
Mr. A. H. Dickinson	5	0	0
Mr. Mark Fenwick	5	0	0
Rev. Principal Gurney	5	0	0
Mr. Robt G. Hoare	5	0	0
Professor M. C. Potter, M.A.	5	0	0
Mr. W. M. Pybus	5	0	0
Mr. C. O. Trechmann	5	0	0
Mr. John D. Walker	5	0	0
Lieut.-Col. C. H. E. Adamson, C.I.E.	2	2	0
Dr. Embleton	2	2	0
The Misses Lambert	2	0	0
Mr. Alex. Meek	2	0	0
Mr. Thos. F. Deacon	1	1	0
Mr. W. J. H. Graham	1	1	0
Mr. Richard Luckley	1	1	0
Mr. H. A. Paynter	1	1	0

Subscriptions to the Fund may be sent to the Honorary Treasurer of the Society, or paid to Mr. Wright, at the Museum, or at any of the local Banks.

By order of the Committee,

A. H. DICKINSON, } Honorary
M. C. POTTER, } Secretaries.

In the beginning of May the architect suggested that the time had arrived when the weather would allow some of the work of repairs to be proceeded with, and the matter was referred to the House Committee to report to the next Committee Meeting on the plans prepared by Mr. Rich. Three plans for altering the roof were submitted for the final decision of the Committee, who unanimously agreed to adopt the plan most strongly recommended by the architect. At the same time Mr. Rich was empowered to obtain tenders immediately that the work might be proceeded with at once, and it is now in progress.

On 9th February, 1898, a House and Finance Committee was appointed, to which is now relegated the supervision of the finances of the Society and the superintendence and care of the buildings and library.

Evening Meetings.—At the Committee Meeting in September it was resolved that six evening meetings of the members and associates should be held conjointly with the members of the Tyneside Naturalists' Field Club on the third Monday of the winter months, as in former years, when addresses in Natural History subjects should be given, original papers read, and subjects of interest exhibited. The first meeting was held on Monday, October 18th, and was fairly well attended. The two Prize Essays were read, and these formed the groundwork for a lengthened and interesting discussion among those present, affording a useful opportunity for an interchange of opinions among the members and associates.

At the second meeting November 15th, the Rev. Canon Norman gave a graphic description of his recent visit and residence in Madeira, and exhibited, with copious explana-

tions, a large collection of the Land Mollusca of that island paradise of the Atlantic. The address was well illustrated with numerous photographs of the rich and tropical vegetation of the island.

At the next meeting in January 17th, Prof. G. S. Brady gave a highly interesting account of the British Water Fleas (*Daphnidæ*), illustrated with limelight views of these minute Crustaceans, which often swarm in our ponds, ditches, and other pieces of fresh water. After the address the remainder of the evening was spent in the exhibition of various specimens by other contributors, especially the exhibition of a small collection of Lepidoptera (Butterflies), to illustrate the theory of Mimicry as explained by the Rev. J. M. Hick.

At the meeting held on Februay 21st, the Rev. John Hull, of Haltwhistle, favoured the members with an elaborate address on Spiders and their structure, with numerous limelight illustrations, which was listened to with much interest and pleasure by those who had the privilege of hearing it.

At the March meeting, Prof. G. R. Murray gave a most interesting address on "Bacteria," with numerous limelight illustrations. The address being followed by a short discussion on the usefulness and destructiveness of these extremely minute organisms. Mr. Milburn contributed for exhibition an immense sized larva of one of the Giant Beetles (*Dynastes*) found in the hollow and decayed part of a log of Lignum-vitæ imported from Mexico.

At the last Evening Meeting, April 18th, Mr. Alex. Meek gave a lucid historical account of the progress of "Fishing Legislation," especially that part relating to the trawlers and trawling in the North Sea and on our East Coast.

Unfortunately it cannot be said that the meetings of this first course were as well attended as the Committee anticipated and could have wished. The best thanks of the Society are due to the gentlemen who kindly consented to give an address at each of these Evening Meetings. It is hoped that as they become more established, and the interesting character of the meetings is more fully recognised, the attendance may increase.

The Committee have pleasure in being able to state that the attendance of members and the public generally has been much the same as in former years, the fees for admission showing a slight increase of visitors compared with last year. There is also an increase in the amount of subscriptions received, but this arises from the payment of arrears, and not from an actual increase of membership. During the past twelve months seven new Members and twenty-one Associates have been elected, but this small increase, the Committee regret, is counterbalanced by the loss of four of the older members by death and by several resignations.

Obituary.—Among the older members of the Society whose loss we have to deplore must be mentioned our esteemed member of Committee, Mr. John Philipson, who for many years took an active interest in the welfare of the Society. Though not practically engaged in any Natural History pursuit himself, he ever took a lively interest in the labours of others, and from his youth was accustomed, whenever opportunity afforded, to associate with the Naturalists of this Society and those of the Tyneside Club in their Field Excursions; whose work he fully appreciated, and whose company he preferred in rambling over the moors or along the sea-shores of these Northern Counties. As president of the Field Club, or chairman at any of the Society's meetings, his aim was to encourage the younger members in pursuits which were dear to himself, and to foster a love of nature which can only be fully gratified by outdoor excursions to some of the wilder and less populated parts of the country.

The most important donations received since the last report consist of volumes of books and fasciculi of important groups of British Plants. The Rev. Principal Gurney kindly presented twenty volumes of the Journal of the Geological Society of London. The number of volumes and parts of transactions received in exchange from other Societies has been much the same as in former years. The Rev. Canon Norman presented several fasciculi of the more difficult groups of British Plants, such as the Rubi, Salices and Hieracia, and many additions

have been made to the Ornithological Collection by Messrs. G. E. Crawhall, W. E. Beck, and Major Anne, and others. A young Dolphin, *Delphinus delphis*, six feet in length, caught in a salmon net off the coast near the Tyne, was presented by Mr. J. V. Henderson, Clayton Street. As it was found impossible to cure the skin in a satisfactory manner, the bones are preserved for a skeleton. Following this report will be found a complete list of the donations and additions to the Collections of the Museum during the past year.

The following is a list of the New Members and Associates elected during the year from July, 1897, to June 30th, 1898 :—

MEMBERS.

James Millar.....	46, Jesmond Road.
Robert Newton, Junr. ...	Brookfield, Gosforth.
Rev. A. Boot, M.A.....	St. George's Vicarage, Jesmond.
L. Davidson	8, Burdon Terrace.
W. J. H. Graham	Clayton Chambers, Westgate Road.
J. B. Payne	15, Mosley Street.
R. A. J. Redmayne	Seaton Delaval, Northumberland.

ASSOCIATES.

J. H. Crosier	Gray's Timber Yard.
S. Campbell	12, Queen's Terrace, Gateshead.
R. W. Ellison.....	210, High Gardens.
J. J. Forster	23, Lovaine Crescent.
E. Girling	The Breweries, Bath Lane.
C. H. Innes	Nun's Moor.
C. J. Milburn.....	Ovingham.
G. Nicholson.....	4, Huntingdon Street.
S. Sykes	Westgate Road.
C. Turnbull	Hylton Lodge, North Shields.
H. J. Wallace	Art Gallery.
David Rosie	80, Gainsborough Road.
T. Purvis	Eldon Lane, Eldon Square.
Herbert Greenwell	26, Leazes Terrace.

Miss Elfrida Sturge ..... Maiden Cross, Hexham.
John Watson ..... 102, Elizabeth Terrace, Westoe.
Richard Brown, Junr. ... 33, Stanton Street.
J. T. Miller ..... 25, Park Street, Byker.
W. J. Richardson ..... 27, Addison Street, Heaton.
Thomas Lockey ..... 16, Milton Street.
J. I. Urquhart ..... 848, Back Scotswood Road.

THE HONORARY TREASURER IN ACCOUNT

Dr. CURRENT ACCOUNT FROM JUNE 30TH,

1897.	RECEIPTS.	£	s.	d.
July 1.	To Balance of last Account	202	3	2
1898.				
June 30.	,, Members' Subscriptions	270	12	9
	,, 19 Associates' Subscriptions	4	15	0
	,, Admission Fees	164	1	7
	,, Interest on Stock :—			
	£2,000 in Newcastle Corporation, 3½ per cent. Stock (less Income Tax) £67 13 4			
	£500 in Wear Commissioners, 4½ per cent. Stock (less Income Tax) 21 15 0			
	£2,000 in Tyne Commissioners' Consolidated Fund at 4 per cent. (less Income Tax) 77 6 8			
		166	15	0
	,, Guides to Museum sold	4	8	5
	,, Repairs of Railing repaid	9	4	4
	,, Discounts (Tradesmen's Accounts)	0	5	10
		£822	6	1

WITH THE NATURAL HISTORY SOCIETY.

1897, TO 30TH JUNE, 1898. CR.

1898.	PAYMENTS.	£	s.	d.	£	s.	d.
June 30.	By Salaries and Wages :—						
	Richard Howse	200	0	0			
	Joseph Wright	100	0	0			
	Wm. Voutt	67	12	0			
	Albert Spencer	58	16	0			
	Mrs. Atkinson	26	0	0			
					452	8	0
	,, Incidental Expenses :—						
	Coal	6	3	6			
	Coke	13	14	6			
	Gas	6	3	11			
	Water	4	15	4			
	Electric Lighting	10	8	0			
	Advertisements	2	12	1			
	Income and Land Taxes	6	10	6			
	Insurances	23	3	0			
					73	10	10
	,, Tradesmen's Accounts :—						
	Robson & Sons	4	10	0			
	Dinning & Cooke	9	7	10			
	Gurney & Jackson	1	0	0			
	G. G. Laidler on account	10	0	0			
	Crossling & Co.	0	13	6			
	John Bell & Co.	2	19	6			
	Beck & Sons.	7	8	2			
	John Jackson	3	8	0			
	Brady & Martin	1	3	2			
	J. & D. Richardson	0	10	0			
	Currie & Co.	0	16	0			
	Ferguson	4	18	4			
					46	14	6
	,, Sundries :—						
	Disbursements by J. Wright	20	16	3			
	Museums Association	1	1	0			
	Lichen Herbarium	0	13	0			
	Cheque Book	0	10	0			
					23	0	3
	,, Transferred from General to Deposit Account, Miss M. J. Hancock's Legacy				90	0	0
	,, Balance as per Bank Book				136	12	6
					£822	6	1

THOS. THOMPSON,
HON. TREASURER.

Examined and found correct.

SAM. GRAHAM, AUDITOR.

THE HONORARY TREASURER IN ACCOUNT

Dr. CAPITAL ACCOUNT,

1897.		£	s.	d.
July 1.	To sum invested in Newcastle Irredeemable Stock at 3½ per cent., as per last Capital Account...	2000	0	0
	,, sum invested in River Wear Commission Funded Debt at 4½ per cent., as per last Capital Account	500	0	0
	,, sum invested in Tyne Commissioners Consolidated Fund at 4 per cent., as per last Capital Account.....	2000	0	0
Aug. 6.	,, Miss M. J. Hancock's Legacy of £100, less legacy duty transferred from General Account and placed on Deposit Receipt No. 29486 ...	90	0	0
		£4590	0	0

THOS. THOMPSON,

Hon. Treasurer.

FITTING ACCOUNT,

1897.		£	s.	d.
July 1.	To Balance from last Account	50	9	0
		£50	9	0

THOS. THOMPSON,

Hon. Treasurer.

WITH THE NATURAL HISTORY SOCIETY.

30TH JUNE, 1898. CR.

1898.		£	s.	d.
June 30.	By Newcastle Corporation Irredeemable Stock at $3\frac{1}{2}$ per cent., as per Certificate No. 260	2000	0	0
	,, River Wear Commission Funded Debt, No. 967, at $4\frac{1}{2}$ per cent.	500	0	0
	,, Tyne Commissioners Consolidated Fund at 4 per cent., Mortgage No. 5948	2000	0	0
	,, Miss M. J. Hancock's Legacy, Deposit Receipt No. 29486	90	0	0
		£4590	0	0

Examined and found correct.

SAM. GRAHAM, AUDITOR.

30TH JUNE, 1898.

1898.		£	s.	d.
June 30.	Balance at Bank	50	9	0
		£50	9	0

Examined and found correct.

SAM. GRAHAM, AUDITOR.

OFFICERS OF THE NATURAL HISTORY SOCIETY, 1898–1899.

The following Members are proposed as Officers of the Society for 1898–1899:—

PRESIDENT.

Lord Armstrong, C.B., F.R.S.

VICE-PRESIDENTS.

The Earl of Ravensworth.
Sir Lowthian Bell, Bart.
Sir Andrew Noble, K.C.B., F.R.S.
Sir M. W. Ridley, Bart., M.P.
The Mayor of Newcastle.
R. R. Dees, Esq.
Dennis Embleton, Esq., M.D.
D. O. Drewett, Esq.
Joseph W. Swan, Esq.
H. N. Middleton, Esq.
Alex. S. Stevenson, Esq.
W. A. Watson-Armstrong, Esq.
W. D. Cruddas, Esq., M.P.
E. J. J. Browell, Esq.
Prof. G. S. Brady, M.D., F.R.S.
I. G. Dickinson, Esq.
John A. Woods, Esq.
G. H. Philipson, Esq., M.D.
John Daglish, Esq.
Geo. E. Crawhall, Esq.
Rev. Principal Gurney, D.C.L.
Norman Cookson, Esq.
J. F. Spence, Esq.
R. Y. Green, Esq.

HON. TREASURER.

Thomas Thompson, Esq.

HON. SECRETARIES.

A. H. Dickinson, Esq. | Prof. M. C. Potter, M.A.

COMMITTEE.

H. T. Archer.
W. E. Beck.
Lieut.-Col. C. H. E. Adamson, C.I.E.
Samuel Graham.
R. C. Clephan.
Prof. G. R. Murray.
N. H. Martin.
W. M. Pybus.
Bryan Cookson.
John Pattinson.
Alexander Meek.
J. D. Walker.

AUDITOR.

Samuel Graham.

HONORARY CURATORS,

1898–1899.

ZOOLOGY.

VERTEBRATA.

D. Embleton, M.D.
Samuel Graham.
Geo. E. Crawhall.
Thomas Thompson.
Alexander Meek.

INVERTEBRATA.

N. H. Martin.
Alexander Meek.
Rev. Canon Norman, F.R.S.
Prof. Wm. Somerville.
Lieut.-Col. C. H. E. Adamson.

BOTANY.

Rev. H. E. Fox, M.A., London.
Rev. Wm. Johnson.
J. Bidgood, B.Sc.
Prof. M. C. Potter.
C. E. Stuart.

GEOLOGY AND MINERALOGY.

E. J. J. Browell.
John Daglish.
E. J. Garwood.
Rev. Principal Gurney, D.C.L.
J. W. Kirkby.
Prof. G. A. Lebour.
Jas. Pattinson.
Chas. O Trechmann.

CURATOR.

Richard Howse.

KEEPER OF MUSEUM BUILDING.

Joseph Wright.

LIST OF EXCHANGES AND DONATIONS TO THE MUSEUM AND LIBRARY

OF

THE NATURAL HISTORY SOCIETY,

FROM JULY 1ST, 1897, TO JUNE 30TH, 1898.

AMERICAN SOCIETIES.

UNITED STATES OF AMERICA.

Albany:—New York State Museum.

48th Annual Report for 1894.

Reports, Vols. 1, 2, 3, 1895.

Boston:—Society of Natural History.

Memoirs, Vol. V., No. 3.

Proceedings, Vol. 28, pp. 1–115, and 117–156; 157–235, Dec., 1897.

Boston:—American Academy of Arts and Sciences.

Proceedings, Vol. XXXII., Nos. 15, 16, 17; Vol. XXXIII., Nos. 1–12 *The Academy*

Cambridge:—Museum of Comparative Zoology, Harvard College.

Memoirs, Vol. XIX., No. 2.

Memoir, No. 23. Die Medusen.

Bulletin, Geol. Ser., Vol. 28, No. 4.

,, Vol. 31, Nos. 1, 2, 3, 4, 5, 6, 7.

,, Vol. 32, Nos. 1, 2, 3, 4, 5. June, 1898.

Annual Report of the Curator, 1896–97. *Prof. Alex. Agassiz.*

Mineapolis, Minn.:—Geol. and Nat. Hist. Survey of Minnesota.

The Metasperma of the Minnesota Valley.

Botanical Studies. Bulletin, No. 9, Part 12, 1898.

New York:—Academy of Science and Lyceum of Nat. History.

Annals, Vol. 9, Nos. 6–12. *The Academy.*

Philadelphia:—Academy of Natural Sciences.

Proceedings, Parts 2, 3. *The Academy.*

Philadelphia:—American Philosophical Society.

Proceedings, Vol. 35, No. 153.

,, Vol. 36, Nos. 154, 155, 156. *The Society.*

Salem :—American Association for Advancement of Science.

St. Louis, Mo. :—Academy of Sciences.

Transactions, Vol. VII., Nos. 4–16, 1896–97.
Missouri Botanical Garden Report, 1897.

Washington :—Smithsonian Institution : Bureau of Ethnology.

14th Annual Report, 1892–93.
15th ,, ,, 1893–94.
16th ,, ,, 1894–95.

Washington : — Smithsonian Institution : Contributions to Knowledge.

Reports for 1895.

Miscellaneous Collections :—

Memoir of George Brown Goode, 1897.
Bibliography of the Metals of the Platinum Group, 1748–1896.
History of the First Half-century of the Smithsonian Institute, 1846–1896.
A Catalogue of Earthquakes on Pacific Coast, 1769–1897.

The Institution.

Washington :—Smithsonian Institution, U.S., National Museum.

Proceedings, U.S.N.M., Vol. 19, 1897.
Bulletin, No. 39, Part 1. *The Institution.*

Washington :—United States Geological Survey.

Monographs XXV., XXVI., XXVII., XXVIII., with Atlas.
17th Annual Reports, Parts 1 and 2.
Bulletins, 87, 127, 130, 135–148.

The Director of U.S. Geol. Survey.

Washington :—Department of Agriculture.

Year-book for 1896 and 1897.
Biological Survey, Bulletin, No. 13.

The U.S. Department of Agriculture.

SOUTH AMERICAN STATES.

Argentine States. Buenos Ayres :—Museo Nacional.

Anales Tome, V. (Ser. 2, Vol. 2), 1896–7.
Memoria, 1894, 95, 96. *The Director, D. Carlos Berg.*

Uruguay, Monte Video :—Museo Nacional.

Anales, t. 2, Part 6, and Part 8, 1898. *The Director.*

BRITISH SOCIETIES.

Berwick-upon-Tweed:—Berwickshire Naturalists' Club.
Vol. 15, Part 2, 1897. *The Club.*

Cambridge University:—Philosophical Society.
Proceedings, Vol. IX., Parts 6, 7, 8. *The Society.*

Cardiff:—Naturalists' Society.
Report and Transactions, Vol. 29.

Dublin:—Royal Society.
Transactions, Vol. V., Part 13; Vol. VI., Parts 2 13.
Proceedings, Vol. VIII., Part 5.

Edinburgh:—Geological Society.
Transactions, Vol. VII., Part 3, 1897.

Edinburgh:—Botanical Society.

Edinburgh:—Scottish Meteorological Society.
Journal, 3rd Ser., Nos. 13 and 14 *The Society.*

Glasgow:—Natural History Society.
The Society.

Glasgow:—Geological Society.
Transactions, Vol. X., Part 1, 1892–3. *The Society.*

Leeds:—Philosophical and Literary Society.
Annual Report for 1896–97. *The Society.*

Leeds:—Yorkshire Naturalists' Union.
Transactions, Part 21, 1898 *The Secretary.*

Liverpool:—Literary and Philosophical Society.
Proceedings, Vol. LI., 1896–97. *The Society.*

London:—British Museum, Cromwell Road, Kensington.
Catalogue of Welwitch's African Plants, Part I.
,, of Fossil Cephalopoda, Part III.
,, of Tertiary Mollusca, Part I.
Guide to Fossil Mammals and Birds.
,, ,, Reptiles and Fishes.
,, ,, Invertebrates and Plants.
Catalogue of Madreporian Corals, Vol. III.
The Trustees of British Museum.

London:—Museums Association.
Report of Proceedings of 8th Annual Meeting, Oxford, July 1897.

London :—Nature.

From June 30th, 1897—June 30th, 1898. *The Publisher.*

London :—Quekett Microscopical Club.

Journal, Vol. 6, 2nd Ser., No. 41 ; Vol. 7, No. 42. *The Club.*

London, Greenwich :—Royal Observatory.

Magnetical and Meteorological Observations, 1894–95.
The Astronomer Royal.

London.

Rhopalocera Exotica, Parts 41, 42, 43, 44. *Purchased.*

London :—Zoological Society.

Proceedings, Parts 2, 3, 4, 1897 ; Part 1, 1898.
Transactions, Vol. 14, Parts 4, 5, 6. *The Society.*

Manchester :—Literary and Philosophical Society.

Memoirs and Proceedings, 4th Ser., Vol. 41, No. 4 ; Vol. 42, Parts 1, 2. *The Society.*

Newcastle-on-Tyne :—Institute of Mining and Mechanical Engineers.

Transactions, Vol. 46, Parts 4, 5, 6, 1897 ; Vol. 47, Parts 1, 2, 3.
Borings and Sinkings of Northumberland and Durham, U–Z. 1897.
Annual Report, 1897. *The Institute.*

Newcastle-on-Tyne :—Geographical Society.

Vol. IV., No. 1.

Northampton :—Northamptonshire Natural History Society and Field Club.

Nos. 69, 70, 71, 72 for 1897. *The Society.*

Norwich :—Norfolk and Norwich Naturalists' Society.

Transactions, Vol. VI., Part 3, 1896–97. *The Society.*

Plymouth :—Plymouth Institute.

The Institute.

Shildon, Co. Durham.

Harbarium of Lichen-Flora of North of England by Rev. W. Johnson.
Fasciculus VIII., Nos. 281–320. March, 1898. *Purchased.*

York :— Yorkshire Philosophical Society.

Annual Report for 1897. *The Society.*

COLONIAL SOCIETIES.

AUSTRALIA.

Brisbane, Queensland:—Museum.
Annals, No. 1, 1891. *The Agent-General.*

Sydney, N.S.W.—Royal Society.
Journal and Proceedings, Vol. XXX., 1897. *The Society.*

Sydney, N.S.W.:—Australian Museum.
Report of Trustees for 1896.
Records, Vol. III., Nos. 2, 3. *The Trustees.*

CANADA.

Halifax, Nova Scotia:—The N.S. Institute of Natural Science.
Proceedings and Transactions, Vol. II., Part 3, 2nd Ser., 1897.
The Society.

Montreal:—Natural History Society.
Canadian Record of Science, Vol. 7, Nos. 5, 6, 7, 1897–98.
The Natural History Society, Montreal.

Ottawa:—Geological Survey.
Annual Report, Vol. VIII., New Ser., 1895.
Maps for Report, 585, 586, 587, 588.
Palæozoic Fossils, Vol. III., Part 3, 1897. *The Director.*

EUROPEAN SOCIETIES.

FRANCE.

Marseilles:—La Faculté des Sciences de Marseille.

Paris:—Museum d'Histoire Naturelle.
Bulletin, No. 8, 1896.
,, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 1897. *The Director.*

AUSTRIA.

Trencsén:—Naturwissenschaftlichen Vereines des Trencsenér Comitates.
Jahresheft, 1896–97.

Vienna:—Verhandlungen der K. K. Zool-Botan. Gesellschaft in Wein.
Jahrgang, 1897, Band XLVII. *The Society.*

DENMARK.

Copenhagen:—Videnskabelige fra Naturhistoriske Forening i Kjobenhavn.

Meddelelser-Aaret, 1896–97.

GERMANY.

Saxony, Dresden:—Der Isis.

Abhandlungen, July–Dec., 1896.
,, Jan.–June, 1897.
,, July–Dec., 1897. *The Society.*

NORWAY.

Bergen:—Bergens Museum.

Aarbog for 1897.
Sars' Crustacea of Norway, Vol. 2, Parts 5, 6, 7, 8, 9, 10.
The Director of the Museum.

Christiania:—University of Christiania.

Fauna Norwegiæ I., G.O. Sars' Phyllopoda, etc.
Norronaskaller (*Crania antiqua*), Barth. *The Librarian.*

Christiania:—Videnskabs-selskabet, etc.

Forhandlingar, Aar., 1896.
The Society.

RUSSIA.

Helsingfors:—Societas pro Fauna et Flora Fennica.

Kieff:—Société des Naturalistes.

Transactions, Vol. XIV., Part 2; Vol. XV., Parts 1, 2, 1898.

SWEDEN.

Stockholm:—Kongliga Svenska Vetenskaps-Akademiens.

Oversigt (Bulletin), Vol. 53, 1896.
Handlingar (Supplement), Band 28, 29, 1895–97.
Bihang (Memoirs), Vol. 22, Sections 1, 2, 3, 4.
The Librarian.

Upsala:—Royal University and Geological Institute.

Bulletin, Vol. 3, Part 1.
Bidrag (Carl von Linné), V., VI. *The Institute.*

MISCELLANEA.

Twenty volumes of the Journal of the Geological Society of London, Vols. 33–52, 1877–1896. *The Rev. Principal Gurney.*

Several Memoirs on Ants by M. Charles Janet, 1897 *The Author.*

Tufts' College Studies No. 5. The chondro-cranium of the Ichthyopsida. *The Director.*

Minnesota Botanical Studies. *In exchange.*

MAMMALS.

Noctule or Great Bat, *Vespertilio noctula*, from Ross, Herefordshire. *F. V. Wallis, Cloughton House, Ross.*

A young Dolphin, *Delphinus delphis*, ♀, 6 feet in length, caught in a salmon net off the Tyne, 25th August, 1897. *Mr. J. V. Henderson, Clayton Street.*

A fœtal Porpoise (in spirits). *Mr. C. Klitgaard, Heaton.*

A Rat's Skull, with abnormal teeth. *Mr. Thos. Robson, Chester-le-Street.*

BIRDS.

Pintail, *Dafila acuta*, adult ♀, shot near Haydon Bridge, 2nd August, 1897.

Tufted Duck, ♀ var., with a white patch on each side the base of upper mandible. Tuft distinct. Haydon Bridge, 2nd Sept., 1897.

Two Coots, ♂ and ♀, from near Haydon Bridge. *George E. Crawhall, Esq.*

Semioptera Wallacei, ♂ and ♀, from Batjan, and several other birds from the Malay Archipelago. *Major Ernest Anne.*

A speckled variety of the Blackbird, *Turdus merula*, ♀, found in garden Highfield House, Newcastle, 20th October, 1897. *Mr. Matthew Reed.*

A fine specimen of the Sooty Shearwater, *Puffinus grisea*, shot on the coast near Newbiggin-by-the-Sea by J. I. Maling, Esq., November or December, 1897. *W. E. Beck, Esq.*

REPTILES AND FISHES.

A small Brill, *Rhombus rhombus*, caught in Blyth Bay, 11th September, 1897. *John Dent, Esq.*

Two Pipe Fishes, *Hippocampus* sp., from Callao Peru. *Mr. John Smith, Pelton Village, Durham.*

Moloch horridus from West Australia. *Wm. Foggin, Esq., Devonshire Terrace.*

Carapace of West Indian Green Turtle, *Chelone Mydas*, caught December, 1897. *Captain Gilbert Howse.*

Moloch horridus from West Australia, and several small Pipe fishes from South Australia. *Purchased.*

A rare Siluroid Fish (*Plecostomus* sp. ?), caught in the Parana las Palmas Campana; brought home frozen in River Plate steamer Zephyrus, 1888. *Presented by Richard Howse, June, 1898.*

INVERTEBRATA.

Two specimens of Norwegian Lobster (*Nephrops Norvegicus*), from trawler off Durham coast. *Mr. Archibold E. MacDonald, Newcastle.*

Two specimens of *Galatea strigosa* caught in lobster pots off Newbiggin-by-the-Sea. *J. I. Maling, Esq.*

Death's Head Moth from Smafield.
Mr. John Avery, Christon Bank Station.

Larva of a large Beetle (*Dynastes* ?), found in rotten wood in a bole of *Lignum-vitæ* from Mexico. *C. J. Milburn, Ovingham.*

A small collection of Chilian Coleoptera from Chili.
Frederico T. Delfin, Cirujano de Marina, Chili.

Shells from Natal, South Africa, collected by Mrs. Gethin.
Presented by Mrs. Gethin's daughter.

A collection of Mollusca, Echinoderms, and other Marine Invertebrata from the White Sea, from the monastery of Solovetsky.
Presented by the Rev. W. Renton Pascoe, British Chaplain, Archangel, per Capt. Gilbert Howse.

Some specimens of *Bulimus Zebra* or *princeps* found in the hollow stem of a Log of *Lignum-vitæ*. *Mr. Polworth, St. Peters.*

Several fine sponges from the North Sea, obtained by a Trawler.
Presented by Mr. Wm. Walker, South Shields.

PLANTS.

Three examples of *Trientalis Europæa* from the Sillsburn, near Rochester, Redewater, Northumberland.
Presented by Rev. Thomas Stevens, Horsley Vicarage.

A piece of *Lignum-vitæ* from Mexico, part of a log in the hollow of which were found several larvæ of one of the Giant Beetles and specimens of *Bulimus*. *Presented by Chris. J. Milburn, Ovingham.*

Fasciculi of British plants of the genera *Rubi*, *Salices*, *Hieracea*.
Presented by the Rev. Canon Norman.

FOSSILS AND MINERALS.

Fine specimen of Peroxide of Manganese from Cartagena, Spain.
John Pattinson, Esq.

Specimens of Igneous Rocks from Guernsey, Diorite Quartz, Mica Trap, Hornblend- or Syenitic-Granite, and examples of Potato-stones from Stratton-on-Fosse. *G. C. Greenwell, Esq., Duffield, Derby.*

A piece of Gold-bearing Quartz-conglomerate from the New Herrot gold-mine, Witwaters' Rand, Transvaal. *P. Hobbs, Esq.*

Five Agate Nodules from Paraguay, South America.
Douglas H. Dickinson, per A. H. Dickinson, Esq.

Fragments of *Sternbergia* and *Calamites*, from Sandstone beds (Millstone Grit ?) near Hexham. *Mr. Temperley, South Park, Hexham.*

Portion of a large silicified *Ammonite* shewing some of the septa from the Chalk at Grays, Essex. *John Watson, Esq., Gateshead.*

Several crystals of Gypsum (Sulphate of Lime) found in laminated clay at a brick-yard near Walker. *G. F. Smithson, Esq.*

Specimens of Iron Ore from Sagusa, near Santiago, Cuba.
Capt. Gilbert Howse, Cullercoats.

Crystals of Gypsum from the Brick-yard near Walker.
Mr. Campbell, Durham College of Science.

A fine large specimen of Iron Ore (*Hæmatite* or Brown Ore ?) from Bilbao, Spain. *John Pattinson, Esq.*

A box of rock specimens from the Rhætic beds of the Severn District containing Fish Remains. *F. R. N. Haswell, Esq., North Shields.*

ETHNOLOGICAL.

Harpoon-Gun used by the Tyne Whalers in killing whales in Davis' Straits. *Thomas Young, Esq., North Shields.*

Native Arrows from Western Australia, and two "Womera" used for throwing spears. *William Foggin, Esq., Devonshire Terrace.*

Wooden Bell used in Burmah suspended to the necks of Cattle.
Mr. Archbold, Blaydon-on-Tyne.

Three Native Arrows with glass heads from Tierra del Fuego.
Philip Hobbs, Esq.

A pair of Royal Shoes or Sandals made for the King of Uganda.
Captain Gilbert Howse, Cullercoats.

NATURAL HISTORY SOCIETY

OF

NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE.

ANNUAL MEETING, 20TH SEPT., 1899.

REPORT OF THE COMMITTEE FOR 1898–99.

In the last Report to the Society it will be remembered the Committee had decided that tenders for altering the Glass Roofs of the Museum Building (according to plans submitted by the Architect, Mr. F. W. Rich, and recommended by him) should be obtained as soon as possible, in order that the work might be proceeded with at once. Several tenders were sent in, and at the July meeting of the Committee were fully considered. Mr. N. Maughan's estimate for the proposed alterations was accepted for the sum of £1,274 8s. 6d. At the same time the other work recommended by the Architect to be done to the outer walls of the building was ordered to be undertaken and commenced with immediately. This work was begun at once, and has been steadily carried on during the latter part of the summer, and also through the winter months, the state of the weather being favourable, and causing little or no delay till it was finished by the renewal of the slating of the roof a few months since in the early part of this summer. During the alterations of the roofs it was absolutely necessary to shut off parts of the building, but this was done it is hoped without much inconvenience to visitors or loss to the income of the Society.

The other work recommended by the Architect at the same time to be done in succession, as far as the funds available will permit, includes the removal and re-plastering of the ceiling of the Upper East Corridor and the repairs to the plastering of the ceilings generally and the colouring, which has not been previously done, of the whole of the walls and ceilings. This part of the work is now in progress and not quite finished. The following Report from the Architect will give a correct account of what has already been done, and what it is desirable should be done further to put the building into a fit state of repair.

1, Eldon Square, Newcastle-on-Tyne, June 2nd, 1899.

M. C. Potter, Esq., Museum.

Dear Sir,

I have to acknowledge receipt of your letter of the 30th ultimo, and below give briefly the description of the work that has already been carried out, viz. :—

Raking out joints and pointing brickwork behind the parapets on the roof, and replacing defective bricks. Raking out joints, and grouting and pointing the open joints of the stonework.

Pointing lead flashings with oil mastic and re-adjusting the leadwork generally.

Cutting off the whole of the rainwater spouts from direct connection with the sewers, and building intercepting shafts to each down spout. The shafts being lined with white glazed bricks, and fitted with stone kerb and iron gratings.

The two W.C.'s cut off from direct connection with the sewers, and intercepting shafts built between, and finished as before mentioned.

The whole of the roof lights, including glass, leadwork, etc., have been renewed, and the roof strengthened.

The slating over the three main roofs has been entirely renewed.

The wood snow-boards have also been repaired.

This work has cost about £1,600, and the remainder of the work which is proposed to be carried out under the original

arrangement is the plastering of the ceilings of the Eastern Corridor and Staircases, ventilators in some of the windows, and the whole of the walls and ceilings coloured. This will cost about £325, making a total of about £1,925, which sum includes my charges.

It will be in the recollection of the Committee that my original estimate of the work was £1,978.

Beyond the work I have mentioned, I should like to have done something to the urinals, as they are in a bad condition, but when we are a little further on I will report as to how we are getting on with money matters.

I am, yours faithfully,

FRANK W. RICH.

REPAIRS FUND.—In May last year an appeal was made, in accordance with a resolution passed at a General Meeting of the Society, to the members and public generally, and it was also strongly urged in the last Report of the Society that a sum of £2,500 was needed to put the Museum Building into a fit state of repair. Of this sum about £1,900 has now been subscribed, as will be seen in the full list of subscribers. Nearly the whole of this has been subscribed by members within the Society, not more than four or five donations have been received from the general public. This great want of sympathy of the inhabitants of the three counties towards a charitable and learned Society, whose only aim is to benefit, instruct, and afford a source of refined pleasure, and impart a knowledge of the Fauna and Flora of the Northern Counties at a trifling cost to poor and rich, is a source of much regret to the Committee, especially as the number of visitors from country places in the summer months shews the benefit which the inhabitants of these counties continually receive from the Museum Collections.

MEMBERSHIP.—Though there has been during the last twelve months considerable loss of members by death and resignations, the receipts for subscriptions and admission fees shew a decided increase compared with the preceding year. The

increase in entrance fees have been caused no doubt by a greater attendance of visitors during the holidays, and by attractions of country people to the town on several occasions. The general work of the Society has been carried on with the strictest economy, so that the general expenditure has been in most things considerably less than in the preceding year.

Hancock Prize Award for 1898.—In answer to the advertisements in the local newspapers Six Essays were sent in by competitors for this year's prize.

The Rev. Canon Tristram and the Rev. Canon Norman were again requested to examine the Essays and award the prize. The Examiners reported that the prize should be awarded to Mr. F. W. Ritson's Essay "A Ramble in North-West Durham"; Mr. George T. Nicholson's Essay "An Entomological Ramble in the District of Hexham," was strongly recommended by the Examiners as a good second. After assigning the first prize of Five Pounds to Mr. F. W. Ritson, the Committee decided to present a prize of Two Pounds to Mr. Nicholson, in accordance with the strong recommendation by the Examiners of its merits. With the approval of the Committee, Mr. Ritson made a selection of Books on Scientific Subjects to the value of the first prize, and Mr. Nicholson chose a number of Scientific Instruments or Appliances.

Joint Evening Meetings.—During the winter months Six Evening Meetings were held conjointly with the members of the Tyneside Naturalist Field Club. Although specially interesting and important addresses were given, it is to be regretted that so few of our members were present—the maximum number attending never exceeding twenty-five. The time of meeting was changed to the last Tuesday in each month to avoid infringing on the days usually occupied by meetings of other Societies.

The first meeting was held on the 20th October, about twenty members being present. The Mayor of Newcastle kindly presided and inaugurated this first meeting. A paper contributed by Mr. D. Woolacott, M. Sc., F.G.S., entitled

"An Explanation of the Claxheugh Section," which is a remarkable and conspicuous cliff-section of the Magnesian Limestone on the south bank of the Wear near South Hylton. Afterwards a translation from the German, by Mr. Deacon, of an interesting paper by Adalbert Seite on the "Flight of the Albatross," was read. Mr. A. Meek gave a short account of his researches on the Growth of Muscle Fibre. As is usual at these meetings a general discussion followed the reading of each paper, and the meeting was concluded by a vote of thanks to the Mayor for his kindness in presiding.

The Second Meeting was held on Tuesday, November 29th, the Mayor again kindly presiding. A very interesting paper was read by Mr. H. S. Sutherland on the Marsupial Mole, *Neoryctes typhlops*, and the country it inhabits in the more remote and wilder regions of South Australia, illustrated by an example now in the Museum captured and brought home by Mr. Sutherland, who was one of the first discoverers of this remarkable and rare Marsupial recently added to the peculiar Fauna of Australia. Mr. D. Rosie exhibited a small collection of Geometer Moths with their larvæ and pupæ.

The Third Evening Meeting took place on Tuesday, January 31st, 1899, the Mayor as usual presiding. Mr. Ritson read the Hancock Prize for 1898, "On a Ramble in West Durham," and Mr. Nicholson read his Essay on "An Entomological Ramble in the Hexham District," with an exhibition of the Insects captured. Mr. D. Rosie read a short paper "On the Preservation of the Larvæ of the Lepidoptera by Inflation," with several of the examples so preserved. Mr. H. S. Sutherland exhibited a Collection of Lepidoptera and other Insects from Japan.

At the Fourth Evening Meeting on February 28th, the Mayor, Councillor George Harkus, presided, and the Rev. Arthur Watts, F.G.S., gave a very interesting account of the Geology and Fossils of Franz Joseph Land, illustrated with examples of the rocks and fossils communicated to him by a friend who had been a member of a recent expedition to these remote Arctic Islands. A short conversation followed, and

votes of thanks were given to the Lecturer for his interesting address, and to the Chairman for presiding.

The Fifth Meeting was held on March 25th, the Mayor of Newcastle in the chair. The Rev. Principal Gurney, D.C.L., read a very interesting and elaborate paper on the "Genesis of Diamonds," illustrated by a Section of one of the Kimberley Mines, and numerous examples of the matrix and associated rocks in which the diamonds are found. Very hearty thanks were given to the Lecturer for his learned address, and to the Mayor for his kindness in presiding.

At the Sixth and last Meeting the Mayor again presided. Prof. Potter read an interesting and instructive lecture entitled "In the Beck a Study," by the Rev. E. A. Woodruffe-Peacock, which was followed by a long conversation on points raised in the Lecture.

A short note on the occurrence of the Long-armed Crab, *Munida Bamffius* (Pennant), caught in a Lobster-pot at Newbiggin-by-the-Sea, was read by Mr. Richard Howse. The specimen had been obtained from the fishermen, and sent to the Museum by J. I. Maling, Esq. Afterwards a Collection of Diptera collected in the South of France by Mr. Frederic Raine, and presented by him to the Museum, was exhibited. The specimens in the Collection had been kindly named and arranged as far as possible by the Rev. Wm. Wingate, of Bishop Auckland.

This terminated the series of Evening Meetings, and it was a cause of regret to those who attended them that so few of the members were present to enjoy the excellent addresses that were given, and to encourage by their presence and approval the pursuits of a science which refines and stimulates and calls into activity some of the best efforts, and supplies the purest pleasure man can enjoy.

Donations to the Museum.—Among the numerous donations to the Museum Collections presented during the year must be specially mentioned those by Mrs. L. Watson, of Gateshead, being the Collections made by the late Joseph

Watson, jun., of Gateshead, and consisting of a large Cabinet with Collection of British Birds' Eggs and Nests; a Collection of Butterflies and Moths; a Collection of Devonian Fishes from the North of Scotland, and other Fossils. The Rev. Robert Sterling, of Gosforth, presented a very interesting Collection of Ancient Glass Vessels, Pottery, and Lamps from the rock-hewn tombs of Beit-Jebrin. Some interesting additions to the Ornithological Collection have been received from Lady Noble, Messrs. Norman Cookson, George E. Crawhall, W. E. Beck, J. D. Walker, and Mr. John Jackson, and others. A fine pair of Antlers of the Brow-antlered Deer from Burmah were presented by Lieut.-Colonel C. H. E. Adamson, C.I.E., and a splendid pair of Horns of the Oryx Antelope from Natal by Mrs. Jenkins. To the Botanical Collections the Rev. Canon Norman and the Rev. H. E. Fox have contributed valuable fasciculi of Plants, and the Executors of our late member, Robert Forster, Esq., have presented a valuable Collection of Seaweeds, chiefly local, and several volumes of Nature-printed Seaweeds and Harvey's Manual to the Library. Mr. J. T. Graham, Hartlepool, has sent from time to time examples of some of the rarer Fishes captured by local trawlers. Appended to this Report will be found a complete list of all the books and specimens received for the Museum during the year ending 30th June, 1899.

The following gentlemen have been elected Members and Associates of the Society during the financial year 1898-99 :—

HONORARY MEMBER.

Rev. Canon Norman... The Red House, Berkhamsted, Herts.

LIFE MEMBER.

C. O. Trechmann, Esq. Hudworth Tower, Castle Eden.

ORDINARY MEMBERS.

Chas. W. S. Goodger... Percy Gardens, Tynemouth.
John D. Challoner..... 15, Framlington Place, Newcastle.
Ralph E. Lambton ... 3, St. Thomas' Place, Newcastle.

Lewis F. Richardson... The Gables, Elswick Road, Newcastle.
James B. Harris..... Osborne Road, Newcastle.
George Sisson..... Washington Chemical Works.
Bertram Clay ..... 14, Windsor Terrace, Newcastle.

ASSOCIATES.

Charles Boyd ..... 159, Jefferson Street, Newcastle.
John Wm. Brown ..... 33, Stanton Street, Newcastle.
Charles J. Graham..... 44, Fifth Avenue, Heaton, Newcastle.
Jas. Edwin Hoggarth... 15, Dockwray Square, North Shields.
James Ney Tate..... 202, Norfolk Road, Byker, Newcastle.
George Watson ..... 3, Victoria Terrace, Low Fell.
Nicholas Carr ..... Breckon Beds, Low Fell.
William Hunnam ..... 63, Mason Street, Byker, Newcastle.
Matthew Robson ..... 64, Gainsbro' Grove, Newcastle.

ABSTRACT OF MINUTES.

W. A. WATSON-ARMSTRONG, Esq., Presiding.

The Hon. Secretary read the Minutes of last Meeting, which were confirmed and signed.

Several letters were read from Members regretting their inability to attend this Meeting.

The Hon. Secretary read the Committee's Report for 1898–99.

The Hon. Treasurer read the Financial Report for the same period.

The Chairman moved the adoption of the Committee's and the Hon. Treasurer's Financial Reports, which was seconded by the Rev. Principal Gurney, and carried unanimously.

Mr. R. W. Cooke moved the election of the gentlemen proposed as Officers for 1899–1900, which was seconded by Mr. T. F. Deacon, and carried unanimously.

Mr. J. F. Spence proposed a vote of thanks to the Chairman for his kindness in presiding at this meeting. Mr. R. Y. Green seconded the vote of thanks, which was carried by acclamation.

THE HONORARY TREASURER IN ACCOUNT

DR. CURRENT ACCOUNT FROM JUNE 30TH,

1898.	RECEIPTS.	£	s.	d.
June 30.	To Balance of last Account	136	12	6
1899.	,, Entrance Fees	177	10	7
June 30.	,, Members' Subscriptions	283	5	0
	,, Associates ,,	3	10	0
	,, Interest on Stock :—			
	Newcastle Corporation, 3½ per cent. Stock (less Income Tax) £67 13 4			
	Wear Commissioners, 4½ per cent. Stock (less Income Tax)..... 21 15 0			
	Tyne Commissioners' Consolidated Fund at 4 per cent. (less Income Tax)..... 77 6 8			
		166	15	0
	,, Guides sold	1	2	8
		£768	15	9

WITH THE NATURAL HISTORY SOCIETY.

1898, TO JUNE 30TH, 1899. Cr.

1899.	PAYMENTS.	£	s.	d.	£	s.	d.
June 30.	By Salaries and Wages :—						
	Richard Howse	200	0	0			
	Joseph Wright	100	0	0			
	Wm. Voutt	67	12	0			
	Albert Spencer	59	16	0			
	Mrs. Atkinson	26	0	0			
					453	8	0
	,, Incidental Expenses :—						
	Coal	7	18	0			
	Coke	20	12	6			
	Gas	6	5	9			
	Water	4	11	10			
	Electric Lighting	7	11	7			
	Advertisements	2	12	6			
	Income and Land Taxes	6	11	11			
	Insurances	23	3	0			
					79	7	1
	,, Tradesmen's Accounts :—						
	Dinning & Cooke	0	14	0			
	Currie & Co.	0	11	0			
	Gurney & Jackson	1	15	0			
	J. Bell & Co	1	8	6			
	Crossling & Co.	1	8	2			
	G. G. Laidler	13	14	11			
	Middlemiss Bros.	6	5	8			
	Jno. Jackson	8	16	6			
					34	13	9
	,, Sundries :—						
	Publishing Act T.N.F.C.	54	17	8			
	Museums Association	1	1	0			
	Sundries—per Mr. Wright	12	15	10			
	Cheque Books	0	10	0			
					69	4	6
	,, Balance in Bank Book				132	2	5
					£768	15	9

THOS. THOMPSON,

Hon. Treasurer.

Examined with the Books and Vouchers and found correct.

SAM. GRAHAM, AUDITOR.

THE HONORARY TREASURER IN ACCOUNT

Dr. BUILDING REPAIRS

1899.	RECEIPTS.	£	s	d.
June 30.	To Subscriptions to the Building Repairs Fund, as per List	1804	18	0
	,, Bankers Interest on Account	1	12	6
		£1806	10	6

FITTING

1899.		£	s.	d.
July 1.	Balance in Bank	50	9	0
		£50	9	0

CAPITAL ACCOUNT,

1898.		£	s.	d.
July 1.	To Sum Invested in Newcastle Irredeemable Stock at 3½ per cent., as per last Capital Account...	2000	0	0
	,, Sum Invested in River Wear Commissioners Funded Debt at 4½ per cent., as per last Capital Account	500	0	0
	,, Sum Invested in Tyne Commissioners Consolidated Fund at 4 per cent., as per last Capital Account	2000	0	0
	,, Miss M. J. Hancock's Legacy of £100, less legacy duty placed on Deposit Receipt No. 29486, August 6th, 1897	90	0	0
		£4590	0	0

WITH THE NATURAL HISTORY SOCIETY.

FUND ACCOUNT. Cr.

1898.	PAYMENTS.	£	s.	d.
Aug. 10.	By Advertisements	12	9	2
Dec. 14.	,, Nicholas Maughan	600	0	0
1899.				
Feb. 8.	,, Nicholas Maughan	400	0	0
March 8.	,, Nicholas Maughan	300	0	0
,, 11.	,, J. Bell & Co.	4	6	0
June 30.	,, Balance as per Bank Pass Book	489	15	4
		£1806	10	6

Examined with Books and Vouchers and found correct.
SAM. GRAHAM, AUDITOR.
THOS. THOMPSON, HON. TREASURER.

ACCOUNT.

1899.		£	s.	d.
June 30.	Balance at Bank	50	9	0
		£50	9	0

SAM. GRAHAM, AUDITOR.
THOS. THOMPSON, HON. TREASURER.

JUNE 30TH, 1899.

1899.		£	s.	d.
June 30.	By Newcastle Corporation Irredeemable Stock at 3½ per cent., as per Certificate No. 260	2000	0	0
	,, River Wear Commission Funded Debt, No. 967, at 4½ per cent.	500	0	0
	,, Tyne Commissioners Consolidated Fund at 4 per cent, Mortgage No. 5948	2000	0	0
	,, Miss M. J. Hancock's Legacy, Deposit Receipt No. 29486	90	0	0
		£4590	0	0

Deeds produced and seen by
SAM. GRAHAM, AUDITOR.
THOS. THOMPSON, HON. TREASURER.

OFFICERS OF THE NATURAL HISTORY SOCIETY,

1899–1900.

The following Members are proposed as Officers of the Society for 1899–1900, viz. :—

PRESIDENT.

Lord Armstrong, C.B., F.R.S.

VICE-PRESIDENTS.

The Earl of Ravensworth.
Sir M. W. Ridley, Bart., M.P.
Sir Lowthian Bell, Bart., F.R.S.
Sir Andrew Noble, K.C.B., F.R.S.
The Mayor of Newcastle.
R. R. Dees, Esq.
D. Embleton, Esq., M.D.
D. O. Drewett, Esq.
Joseph W. Swan, Esq.
H. N. Middleton, Esq.
Alex. S. Stevenson, Esq.
W. A. Watson-Armstrong, Esq.
W. D. Cruddas, Esq., M.P.
E. J. J. Browell, Esq.
Prof. G. S. Brady, M.D., F.R.S.
I. G. Dickinson, Esq.
John A. Woods, Esq.
G. H. Philipson, Esq., M.D., D.C.L.
John Daglish, Esq.
G. E. Crawhall, Esq.
Rev. Principal Gurney, D.C.L.
Norman Cookson, Esq.
J. F. Spence, Esq.
R. Y. Green, Esq.

HON. TREASURER.

Thomas Thompson, Esq.

HON. SECRETARIES.

A. H. Dickinson, Esq. | Prof. M. C. Potter, M.A.

COMMITTEE.

H. T. Archer.
R. C. Clephan.
Samuel Graham.
Lieut.-Col. C.H.E. Adamson, C.I.E.
Prof. G. R. Murray.
N. H. Martin.
John Pattinson.
W. M. Pybus.
Alex. Meek.
J. D. Walker.
W. E. Beck.
J. D. Scott.

AUDITOR.

Samuel Graham.

HONORARY CURATORS,

1899–1900.

ZOOLOGY.

VERREBRATA.

D. Embleton, M.D.
Samuel Graham.
Geo. E. Crawhall.
Thomas Thompson.
Alex. Meek.

INVERTEBRATA.

Rev. Canon Norman, F.R.S.
N. H. Martin.
Alex. Meek.
Prof. Wm. Somerville.
Lieut.-Col. C. H. E. Adamson, C.I.E.

BOTANY.

Rev. H. E. Fox, London.
Rev. Wm. Johnson.
J. Bidgood, B.Sc.
Prof. M. C. Potter.
C. E. Stuart.

GEOLOGY AND MINERALOGY.

E. J. J. Browell.
John Daglish.
E. J. Garwood.
Rev. Principal Gurney.
J. W. Kirkby.
Prof. G. A. Lebour.
John Pattinson.
Chas. O. Trechmann.

CURATOR OF MUSEUM.

Richard Howse.

KEEPER OF MUSEUM BUILDING.

Joseph Wright.

LIST OF EXCHANGES AND DONATIONS TO THE MUSEUM AND LIBRARY

OF

THE NATURAL HISTORY SOCIETY,

FROM JULY 1ST, 1898, TO JUNE 30TH, 1899.

AMERICAN SOCIETIES.

UNITED STATES OF AMERICA.

Boston:—Society of Natural History.

Proceedings, Vol. 28, Nos. 8–12.

Boston:—American Academy of Arts and Sciences.

Memoirs, Vol. XII., No. 4.

Proceedings, New Ser., Vol. XXXIII., Nos. 13–27; Vol. XXXIV., Nos. 1–14; 15–17. *The Academy.*

Buffalo:—Society of Natural Sciences.

Bulletin, Vol. V., Nos. 1–5, 1896–97.

Cambridge:—Museum of Comparative Zoology, Harvard College.

Bulletin, Geol. Ser., Vol. 28, No. 5.

Bulletin, Vol. 32, Nos. 6–9.

Annual Report of the Curator, 1897–98. *Prof. Alex. Agassiz.*

Chicago:—Academy of Sciences.

(Nil).

Madison, Wisconsin:—Geological and Natural History Society.

Forestry Conditions of Northern Wisconsin, 1898.

Instincts and Habits of the Solitary Wasps, 1898.

Transactions, Vol. XI., 1898. *E. A. Birge, Director.*

Mineapolis, Minn.

Minnesota Botanical Studies, Secd. Ser., Part 1. *In Exchange.*

New York:—Academy of Science and Lyceum of Nat. History.

Transactions, Vol. XVI., 1896–7.

Annals, Vol. XI., Nos. 1, 2, 3; Vol. X., Nos. 1–12.

Index, Vol. IX., 1898. *The Academy.*

Philadelphia:—Academy of Natural Sciences.

Proceedings, Parts 1, 2, 3, 1898. *The Academy.*

Philadelphia:—American Philosophical Society.

Transactions, Vol. 19, Parts 2, 3.

Proceedings, Vol. 37, Nos. 157, 158. *The Society.*

Rochester, N. Y.:—Academy of Science.

(Nil).

Salem:—American Association for Advancement of Science.

Proceedings, 46th Meeting, Detroit, Mich., Aug., 1897.

,, 47th ,, Boston, Mass., Aug., 1898

The Association.

St. Louis:—Academy of Science.

Transactions, Vol. VII., Parts 17–20, 1897–8.

,, Vol. VIII., Parts 1–7, 1898. *The Academy.*

Washington:—Smithsonian Institution: Bureau of Ethnology.

(Nil).

Washington:—Smithsonian Institution: Contributions to Knowledge.

Reports for 1896, 1897.

1090. Metallic Carbides, 1898.

1126. A determination of the Ratio of Specific Heats, etc. (Hodgkin's Fund).

1492. A select Bibliography of Chemistry, 1492-1897.

Miscellaneous Collections:—

Vol. XL., A calalogue of Scientific Periodicals, 1665–1897.

The Institution.

Washington:—Smithsonian Institution, U.S. National Museum.

Report of U.S. National Museum, 1895 and 1896.

An Account of the U.S. Nat. Mus. F. W. True.

Report on the Condition, etc., of the U.S. Nat. Museum during the year ending June, 1896. G. B. Goode.

Bulletin, No. 47, Parts 1, 2, Fishes of N. America.

Proceedings, Vol. XX., 1898. *The Director.*

Washington:—United States Geological Survey.

Monograph, XXX.

18th Annual Report, Parts 1–5 and 5 continued.

Bulletins, 88, 89, 149. *The Director.*

Washington :—Department of Agriculture.

Bulletin, No. 50, Div. of Chemistry.
Biological Bulletins, Nos. 9, 10, 11.
Report for 1898.
Year Book, 1898.
North America Fauna, No. 14, Tres Marias Id. Mexico.
The U.S. Department of Agriculture.

SOUTH AMERICAN STATES.

Argentine States, Buenos Ayres :—Museo Nacional.

Communications Tome I., Nos. 1, 2.
The Director, D. Carlos Berg.

Brazil, Rio Janeiro :—Museo Nacional.

Revista Museo, Vol. IX. *The Director.*

Chili, Valparaiso :—Revista Chilena de Historia Natural.

Anno 2, Nos. 9, 10, 11, 12.
Anno 3, Nos. 1, 2, 1899.
Cat. de Hist. Nat. de Valparaiso. 1. Artopodes i Vermes, 1899.
The Director.

Uruguay, Monte Video :—Museo Nacional.

Anales Tome, III., Fasc. 9, 10. *The Director.*

BRITISH SOCIETIES.

Berwick-upon-Tweed :—Berwickshire Naturalists' Club.

Vol. 16, Parts 1, 2.
"The Session Booke of Buncle." *The Hon. Secretary.*

Cambridge University :—Philosophical Society.

Proceedings, Vol. IX., Part 9; Vol. X., Parts 1, 2. *The Society.*

Cardiff :—Naturalists' Society.

Report and Transactions, Vol. 30, 1897–8.

Dublin :—Royal Society.

Transactions, Vol. VI., Parts 14-16; Vol. VII., Part 1.
Proceedings, Vol. VIII., Part 6.

Edinburgh :—Geological Society.

(Nil).

Edinburgh :—Botanical Society.

(Nil).

Edinburgh :—Scottish Meteorological Society.
(Nil).

Glasgow :—Natural History Society.
(Nil).

Glasgow :—Geological Society.
(Nil).

Greenwich :—Royal Observatory.
Magnetical and Meteorological Observations, 1896.
The Astronomer Royal.

Leeds :—Philosophical and Literary Society.
78th Annual Report. *The Society.*

Leeds :—Yorkshire Naturalists' Union.
(Nil).

Liverpool :—Literary and Philosophical Society.
Proceedings, Vol. LII., 1898. *The Society.*

London :—British Museum, Cromwell Road, Kensington.
Catalogue of Birds, Vol. XXVI.
,, of African Plants, Parts 2, 3.
List of Types of Fossil Cephalopoda.
Catalogue of Lepidoptera Phalæna, Vol. 1, Text and Plates.
The Trustees of British Museum.

London :—Museums Association.
(Nil).

London :—Nature.
From June 30th, 1898—June 30th, 1899. *The Publisher.*

London :—Quekett Microscopical Club.
Journal, Vol. 7, 2nd Ser., Nos. 43, 44. *The Club.*

London.
Rhopalocera Exotica, Parts 45, 46, 47, 48. *Purchased.*

London :—Zoological Society.
Proceedings, 1898, Parts 2, 3, 4 ; 1899, Part 1.
Transactions, Vol. 14, Parts 7, 8 ; Vol. 15, Part 1.
List of Fellows, 1898. *The Society.*

Manchester :—Literary and Philosophical Society.
Memoirs and Proceedings, 4th Ser., Vol. 42, Parts 4, 5 ; Vol. 43, Parts 1, 2, 3, 1898–9. *The Society.*

Newcastle-on-Tyne :—Institute of Mining and Mechanical Engineers.

Transactions, Vol. 47, Parts 4, 5, 6, 7, 8.
Annual Report, 1897-8. *The Institute.*

Newcastle-on-Tyne :—Geographical Society.

Vol. IV., No. 2, 3.

Northampton :—Northamptonshire Natural History Society and Field Club.

Vol. X., Parts 73, 74, 75, 76, 1898. *The Society.*

Norwich :—Norfolk and Norwich Naturalists' Societies.

Transactions, Vol. VI., Part 4. *The Society.*

Plymouth :—Plymouth Institute.

Report and Transactions, Vol. 12, Part 4, 1897–98. *The Institute.*

York :—Yorkshire Philosophical Society.

Annual Report for 1898. *The Society.*

COLONIAL SOCIETIES.

AUSTRALIA.

Adelaide, South Australia ;—Australasian Association for the Advancement of Science.

(Nil).

Sydney, N.S.W. :—Royal Society.

Journal and Proceedings, 1898.
Abstract of Proceedings for Aug., Sept., Dec., 1898. *The Society.*

Sydney, N.S.W. :—Australian Museum.

Report of Trustees for 1897.
Records, Vol. III., Nos. 4, 5, 1898-9. *The Trustees.*

CANADA.

Halifax, Nova Scotia :—The N.S. Institute of Natural Science.

Proceedings and Transactions, Vol. 2, Part 4, 2nd Ser., 1898.
The Society.

Montreal :—Natural History Society.

(Nil).

Ottawa :—Geological Survey.

Annual Report, Vol. IX., New Ser., 1896. *The Director.*

EUROPEAN SOCIETIES.

BELGIUM.

Brussels :—Societé Royale Malacologique.

Annales Tome, XXVIII., XXIX., XXX, 1893–4–5.
,, ,, XXXI., fasc. 1, 1896.
Proces Verbaux Tome, XXV., XXVI., XXVII., 1895–8.

FRANCE.

Marseilles :—La Faculté des Sciences de Marseille.

VIII. Fasc. 5–10.
IX. Fasc. 1–5, 1899. *The Society.*

Paris :—Museum d'Histoire Naturelle.

Bulletin Nos. 1-6, 1898. *The Director.*

AUSTRIA.

Prague :—Archiv. der Naturwissenschaft Landesdurchforschung von Böhmens.

Band X., Nos. 3, 4.

Vienna :—Verhandlungen der K. K. Zool-Botan. Gesellschaft in Wien.

Jahrgang, 1898. Band XLVIII. *The Society.*

DENMARK.

Copenhagen :—Videnskabelige fra Naturhistoriske Forening i Kjobenhavn.

Meddelelser, Aaret, 1898.

GERMANY.

Saxony, Dresden :—Der Isis.

Abhandlungen, Jan.–June, 1898. *The Society.*

NORWAY.

Bergen :—Bergens Museums.

Aarbog for 1898.
Sars' Crustacea of Norway, Vol. 2, Parts 11, 12.
The Director of the Museum.

Christiania :—University of Christiania.

Christiania :—Videnskabs-selskabet, etc.
Forhandlingar, Aar., Nos. 1–6, 1898.
Oversight et Title.

RUSSIA.

Helsingfors :—Societas pro Fauna et Flora Fennica.
Acta, Vols. 13, 14.
Meddelanden, 1898. *The Society.*

SWEDEN.

Goteborg :—Kong. Vetenskaps.
Handlingar, 1898.

Stockholm :—Kongliga Svenska Vetenskaps-Akademiens.
Bihang (Memoirs), 8vo, 23, 1–4, 1897–8
Oversigt (Bulletin), Vols. 54–55, 1897–98.
Handlingar, Bandet 30, Nos. 1–4. *The Academy.*

Upsala :—University of Upsala and Geological Institute.
Bidrag (Carl von Linné), VII. *The Institute.*

MISCELLANEA.

Nature Printed Seaweeds, 4 vols.
Harvey's Manual of Marine Algæ.
The Executors of the late Robert Foster, Esq., The Quarries, Elswick Road.

Union Dictionary, 1800. This book formerly belonged to T. Bewick, Engraver, Forth, Newcastle, 25th June, 1800.
Presented by Robert Grey, Esq.

MAMMALS.

Meercat from South Africa. *Ernest Scott, Esq.*

Rabbit Skin and Head with malformed teeth, shot at Newton-on-the-Moor, near Felton. *Mr. Short, per Jno. Duncan.*

A pair of Horns of the Gemsbock (*Oryx gazella*), and several Serpent Skins from Natal, South Africa.
Mrs. Jenkins, Kensington Terrace.

Antlers of Burmese Stag (*Cervus Eldi*) from Sagaing, Upper Burma, 1892. *Lieut.-Col. C. H. E. Adamson.*

BIRDS.

1898. Nest and Five Eggs of the Dabchick from near Haydon Bridge-on-Tyne. *Geo. E. Crawhall, Esq.*

Two Abnormal Eggs of the Domestic Fowl.
Mr. Robt. Stark, Gateshead.

Redshank in first plumage, near Haydon Bridge, June 9th, 1898.
Geo. E. Crawhall, Esq.

Young Curlew in first plumage, Woolsington, 22nd July, 1898.
Mr. John Jackson.

Skin of Brent Goose (*Bernicla brenta*). The bird had been kept alive for several years at Sir Andrew Noble's, Jesmond Dene *Lady Noble.*

Young Coot in summer plumage, shot near Haydon Bridge, Aug., 1898.
Geo. E. Crawhall, Esq.

Young Blackcock changing from first feathers, Sept., 1898, Haydon Bridge.

Wigeon, male immature, Sept., 1898, Haydon Bridge.
Geo. E. Crawhall, Esq.

Pomarine Skua, immature, Newbiggin-by-the-Sea, 1893.

Red-throated Diver, immature, Whitley, Northumberland, 1895.
John Jackson.

Oyster-Catcher with damaged lower mandible, which shews an increase of growth since the injury. *Mr. Newton, Saltney Ferry, Cheshire.*

A Case of Stuffed Birds (British Guiana) set up by John Hancock.
Norman Cookson, Esq., Wylam-on-Tyne.

A Cabinet and Collection of British Birds' Eggs, and a Collection of British Butterflies and Moths, formed by the late Joseph Watson, jun., of Gateshead. *Presented by Mrs. L. Watson.*

A Brace of Partridge (*Perdix cinerea*), ♂ and ♀, shot at Coupland, near Wooler, Dec. 28th, 1898. *J. D. Scott, Esq.*

Kestrel, ♂ apparently very old, killed against wires near Chester.
Mr. V. Newton, Saltney Ferry, Cheshire.

Two Toucdus, *Rhamphastos carinatus* (L.); Two Hangnests, *Ostinops decumanus* (Pall.); Two tricaruncalated Bell Birds, *Chasmorhynchus tricarunculatus* (Verreaux); Three *Parra Jacana*, all from Costa Rica. *W. E. Beck, Esq.*

Male and Female Golden Pheasant, and small Crake (loc. and sp. ?)
The Misses Clapham, Grosvenor Place.

Male and Two Female Pochards, *Fuligla*, shot near Haydon Bridge, ♂ Dec. 14th, 1897; ♀ ♀ Dec. 14th, 1898.
Geo. E. Crawhall, Esq.

Two Pomarine Skuas received from Mr. Scott, Middlesbrough.
In Exchange.

Two Oyster-Catchers, ♀ mature, and ♂ not quite mature, shot at Newton-by-the-Sea and Boulmer; Robin, ♀, summer plumage, Woolsington; Two Missel-Thrush, young in down and first feathers, Woolsington. *Purchased of John Jackson.*

Song Thrush, young, changing from down to first feathers, Woolsington, May, 1899. *Presented by John Jackson.*

Egg of Eider Duck from the Links at Beal. *J. F. Spence, Esq.*

Three Young Starlings in first feathers, Woolsington. *Purchased.*

FISHES.

Block's Topknot, *Phrynorhombus punctatus*, caught near Hartlepool, Dec., 1898. *Mr. J. T. Graham, per J. E. Robson.*

Sting-Ray, *Trygon pastinaca*, caught in trawler between Whitby and Hartlepool. *Mr. J. T. Graham, per J. E. Robson.*

Two specimens of Burn Trout, a Salmon Parr, and a Bull Trout Parr from the North Tyne. *Thomas Dagg, Esq., Tynemouth.*

A Sparling from the Tyne at Newburn. *Thomas Dagg, Esq., Tynemouth.*

A very large Ballan Wrasse, caught off St. Mary's Island, 29th June, 1899. *Mr. W. Dinsdale, Howdon.*

MOLLUSCA, INSECTS, CRUSTACEA.

Sirex gigas, Saw-fly, ♀, found on a Larch near Rothley Crag, Cambo, Oct., 1898. *John Daglish, Esq.*

Small Nest of a Wasp on a branch of Laburnum from a garden at Chollerford. *Mr. J. B. Harris, Newcastle.*

1899. Bone of *Sepia officinalis* taken on the coast near Tynemouth, and three abnormal claws of the Common Crab, *Cancer pagurus*, Cullercoats. *Mr. Wm. Storey, Cullercoats.*

A fine example of *Munida Bamffius*, caught in Lobster Pots at Newbiggin-by-the-Sea in 18 fathoms water. *J. I. Maling, Esq.*

BOTANY.

A Parcel of Dried Plants from Palestine and other localities, forming part of the Herbarium of the Rev. H. E. Fox, of Durham. *The Rev. H. E. Fox, The Croft, Putney Hill, London,*

An Herbarium of British Algæ, chiefly from coast of Northumberland, collected by the late Robert Foster, Esq., of The Quarries, Elswick. *Presented by the Executors, per David Richardson, Esq.*

Specimen of the Bear-berry, *Arctostaphylos Uva-ursi*, gathered near Acton Moor. *Rev. J. C. Dunn, Blanchland.*

Specimen of Gourd ? from Rio Janeiro, Brazil.
Henry Bertram, 17, Clayton Park Square.

FOSSILS AND MINERALS.

Specimens of Iron Ore from Oxelösund, Sweden.
Captain Gilbert Howse.

Specimens of *Anthracosia* and a *Neuropteris gigantea*.
Mr. Thomas Dixon, Shiremoor.

A large Collection of Devonian Fishes, Marl-slate Fishes, and other Fossils, collected by the late Joseph Watson, jun., of Gateshead.
Presented by Mrs. L. Watson, Gateshead.

Specimens of Gold-bearing Quartz from the Champion Reefs, Mysore, India, and other Minerals from Sidapur Coorg, India.
Henry Abbs, Esq.

Several fine specimens of a large Oyster, *Exogyra sinuata*, from the Upper Greensand, Shanklin, Isle of Wight. *J. S. Forster, Esq.*

ETHNOLOGY.

A Collection of Ancient Glass Vessels and Ancient Lamps, and other examples of Pottery, with a few Brass Castings from the rock-hewn tombs on the mountain side at Béit Jebrin (supposed to be the ancient Libnah), not far north of Gaza, South Palestine.
Rev. Robert Stirling, Gosforth Grove.

An Indian Water-bottle dug out of an Indian grave, Brazil, South America. *Mrs. F. T. Ware, Corbridge-on-Tyne.*

III.—*On Copepoda and other Crustacea taken in Ireland and on the North East Coast of England.* By George Stewardson Brady, M.D., LL.D., D.Sc., F.R.S. (Plates I.–IV.)

The following pages contain descriptions of Copepoda which have been taken at various times and in various localities, but which have hitherto remained undescribed.

I am not aware that any lists have been published of the littoral Entomostraca of the East Coast of Ireland, though the opposite shores of the Irish Sea and of the Isle of Man have been in part investigated, and the results published by members of the Liverpool Marine Biological Association. It may therefore be useful to put on record the species observed by me during a short visit in the autumn of 1900. To these lists I add others referring to a tow-net collection made at Roundstone in 1874, one from Portpatrick in 1900, one from Roker, and one from Filey Brigg—all of them containing species of interest. Though chiefly concerned with the Entomostraca, I have included also some Schizopoda, hitherto unrecorded as inhabitants of those localities. The few Amphipoda and Isopoda which I collected are not here noticed, except as regards the Roker collection.

1.—Pools at Newcastle, county Down.

Cythere villosa, G. O. Sars.
,, albomaculata, Baird,
,, cyamos, Norman.
Loxoconcha impressa, Baird.
Cytherura nigrescens, Baird.
,, similis, G. O. Sars.
,, cellulosa, Norman.
Paradoxostoma variabile, Baird.
*Ameira amphibia, G. S. Brady.
Ectinosoma melaniceps, Boeck.
Thalestris Clausii, Norman.
,, longimana, Claus.
Idya furcata, Baird.
Scutellidium tisboides, Claus.
,, fasciatum, Boeck.
Porcellidium fimbriatum, Claus.
Harpacticus chelifer, Müller.
,, flexus, G. S. Brady.
Zaus spinatus, Goodsir.

* In mussel-beds.

2.—Off Newcastle, county Down, 5 fathoms, sandy bottom.

Gastrosaccus sanctus, Van Beneden.
Schistomysis arenosa, G. O. Sars.

———

Acartia longiremis, Lilljeborg.
Isias clavipes, Boeck.
Harpacticus chelifer, Müller.
Lichomolgus fucicolus, G. S. Brady.

3.—In a deep pool below high-water mark, Dundrum.

Cytherois Fischeri, G. O. Sars.
Cyclops æquoreus, Fischer.
Ectinosoma Normani, Scott.
,, melaniceps, Boeck.
Mesochra Lilljeborgii, Boeck.
Thalestris Clausii, Norman.
Idya furcata, Baird.
Harpacticus chelifer, Müller (var.)

In brackish pools above high-water mark, Dundrum.

Cythere gibbosa, B. & R.
Loxoconcha viridis, Müller.
Cytherois Fischeri, G. O. Sars.
Cyclops æquoreus, Fischer.
Mesochra Lilljeborgii, Boeck.
Laophonte subsalsa, G. S. Brady.
Tachidius brevicornis, Müller.
Dactylopus tisboides, Claus.
Idya furcata, Baird.

In surface-net, Roundstone Bay (1874).

Siriella Clausii, G. O. Sars,
Acartia discaudata, Giesbr.
Diosaccus tenuicornis, Claus.
Pseudocyclops obtusatus, B. & R.
Dactylopus Stromii, Baird.
,, tisboides, Claus.
Thalestris Clausii, Norman.
Harpacticus gracilis, Claus.
Lichomolgus fucicolus, G. S. Brady.

Portpatrick Harbour, Wigtownshire, 2-3 fathoms, among weeds.

Loxoconcha impressa, Baird.
Paradoxostoma variabile, Baird.
Temora longicornis, Müller.
Parapontella brevicornis, Lubbock.
Thorellia brunnea, Boeck.
Thalestris Clausii, Norman.
Idya furcata, Baird.
Lichomolgus fucicolus, G. S. Brady.
Acontiophorus elongatus, Scott.

In tidal pools, Filey Brigg, Yorkshire.

Cythere albomaculata, Baird.
Cyclops eboracensis, G. S. Brady.
Temora longicornis, Müller.
Paratachidius inermis, G. S. Brady.
Dactylopus tisboides, Claus.
Laophonte curticauda, Boeck.
Idya furcata, Baird.
Harpacticus chelifer, Müller.
Zaus spinatus, Goodsir.

In pools at extreme low-water mark, Roker, 15th August, 1900.

*Lipura maritima (Guerin).

Podoceropsis excavata, Sp. Bate.
Erichthonius Hunteri, Sp. Bate.

Temora longicornis, Müller.
Acartia longiremis, Lilljeborg.
Ectinosoma melaniceps, Boeck.
Dactylopus platycheles, G. S. Brady.
Thalestris Clausii, Norman.
Zaus spinatus, Goodsir.
Laophonte lamellifera, Claus.
Idya furcata, Baird.
Scutellidium fasciatum, Boeck.

* An apterous insect belonging to the group Collembola. It is met with not unfrequently on the surface of tidal pools on many parts of the British coast, but I am not aware of any record of its occurrence in the Northumberland and Durham district.

Genus CYCLOPS, Müller.

Cyclops eboracensis, sp. nov. (Pl. I., figs. 12–14).

Antennules very short and stout, six-jointed (fig. 12), the first three joints extremely thick, last three suddenly much more slender, the first joint is about as broad as long, second three times as broad as long, third considerably longer than broad: the following formula represents the comparative lengths of the joints:

1.	2.	3.	4.	5.	6.
12	4	13	5	2	4

The swimming feet (fig. 13) are short, all the branches are three-jointed, and the marginal spines of the outer branches are long and slender; caudal laminæ (fig. 14) of moderate size, about twice as long as broad, rather longer than the last abdominal segment, bearing two long but unequal terminal setæ, on each side of which are two very delicate short hairs, and on the outer angle a much stronger but short seta; near the middle of the outer margin is a minute seta, and another between it and the apex.

Hab.—In tidal pools at Filey Brigg, Yorkshire, among weeds.

Only one specimen of this curious Cyclops was found. There can, I think, be no doubt that it is a perfectly developed adult. It seems to approach very closely *C. christianensis*, Boeck, but differs from that species in having

six-jointed antennules and in some other minor points. The only described species with six-jointed antennules is *C. æquoreus*, Fischer, a brackish water form which differs in many ways from the present species.

Genus AMEIRA, Boeck.

Ameira amphibia, sp. nov. (Pl. I., figs. 1–11).

In general outline and appearance much like *Canthocamptus* (fig. 1). Head and thorax coalescent; no distinct separation between thorax and abdomen, which are nearly equally stout; caudal segments very short, about half as long as broad and not more than half as long as the last abdominal somite, the posterior margin of which is fringed with spine-like setæ, the preceding segments being setiferous only near the sides (fig. 11): seen laterally the caudal segments are only half as deep as the preceding ones, the last abdominal segment projecting abruptly beyond them dorsally. Antennules (fig. 2) very slender, short, clothed with very delicate setæ, eight-jointed, the joints nearly equal in length, the fifth, however, being somewhat shorter than the rest. Inner branch of the antenna (fig. 3) minute, two-jointed, bearing three short setæ. Mandibles (fig. 4) extremely small, the shaft rather feebly toothed at the apex, palp minute, composed of two joints, each of which bears two or three setæ; maxillæ (fig. 5) and anterior foot-jaws minute, but in general structure similar to those of most Canthocamptinæ; posterior foot-jaws (fig. 7) short and rather stout, hand oval, claw slender, slightly curved, and about as long as the hand. All the swimming feet have both branches three-jointed, inner branch of the first pair (fig. 8) longer than the outer branch, the first joint rather stout, and about twice as long as the united lengths of the following two, its inner margin fringed with setæ; second and third joints short, nearly equal, the third bearing three, the second one long apical setæ; outer branch equally three-jointed, spines of the external margin long and slender, as also are the apical setæ, firs and second joints marginally ciliated; second,

third, and fourth pairs having the inner branch considerably shorter than the outer (fig. 9), last joint of the outer branch longer and more slender than the preceding, all the joints ciliated on the outer margins, the first two bearing a slender marginal spine a little beyond the middle, last joint with two marginal spines and three apical setæ; the second and third joints have also on their inner margins a single long spiniform seta; the inner branch is clothed in a similar way, but without marginal spines: fifth pair of feet (fig. 10) foliaceous, two-jointed, first joint wide, with a produced subtruncated inner plate which is armed at the apex with five setæ of unequal length, second joint ovate, with ciliated margins and six unequal terminal setæ. The longer of the two principal tail-setæ is about equal in length to the entire body of the animal. Length ·46 mm. Male unknown.

Hab.— On a mussel-bed between tide marks on the beach at Newcastle, county Down, September, 1900.

This species, curious both in structure and habitat, agrees in most respects—in all perhaps, except in the structure of the very minute mouth organs—with *Ameira*. These structures, however, are so extremely minute that I have been unable to obtain quite satisfactory view of them, and the drawings here given must be taken as being to a certain extent provisional. It is very likely that when they have been more perfectly investigated a new genus may have to be instituted for the reception of the species. The mussel-beds in which it occurs form elevated patches on the sandy beach at Newcastle, the spaces between the shells being filled up with a sort of friable conglomerate of sand and *débris*. The Copepoda were obtained by washing a small quantity of this *débris* and straining off the swimming or floating microzoa. This was the only species found, but it occurred plentifully.

Genus PARATACHIDIUS, gen. nov.

Like *Tachidius*, but that only the first swimming foot has both branches three-jointed: the second, third, and fourth

pairs having the outer branch three-jointed, the inner two-jointed; antennules nine-jointed.

Paratachidius inermis, sp. nov. (Pl. II., figs. 12–17; pl. IV., figs. 13–14).

Like *Tachidius* in general appearance; the penultimate and antepenultimate segments of the abdomen fringed on their distal margins with fine setæ (Pl. II., fig. 16), caudal segments twisted, subsigmoid, somewhat shorter than the last abdominal segment, bearing two principal setæ at the apex, the outermost of which is about half as long as the inner one, and is acutely bent at the base (figs. 16, 17), the lateral margins also bear a few small setæ. Antennules nine-jointed (fig. 12), slender; the joints nearly equal in length (except the last, which is short), but gradually narrowing to the extremity; all the joints bearing fine, but not very long, setæ. Antennæ comparatively large and stout (fig. 13), inner branch consisting of a single joint; posterior footjaws small, the hand ovate and simply unguiculate (fig. 14). Outer branch of the first pair of swimming feet rather shorter than the inner branch (fig. 15), each joint bearing a large apical spine on the outer margin, outer margins of both branches ciliated: outer branches of the second, third, and fourth pairs (Pl. IV., fig. 13) longer, the last joint being about twice as long as the preceding ones; inner branch short, two-jointed, the first joint almost rudimentary. The joints of the fifth pair of feet are narrow and elongated (fig. 14), and bear several unequally long setæ. Length about ·5 mm.

Only one example of this species was found in a gathering taken among algæ in tide-pools, Filey Brigg, Yorkshire, August, 1897.

Genus PSEUDOTHALESTRIS, G. S. Brady.

Pseudothalestris monensis, sp. nov. (Pl. III., figs. 11-16).

Cephalothorax of the *female*, seen laterally (fig. 11) stout, with a strongly convex dorsal curve, abdomen much more

slender and very short, the principal tail setæ at least twice as long as the abdomen. Antennules (fig. 12) of moderate length, very slender, eight-jointed, and rather profusely setiferous, the comparative lengths of the joints as in the following formula

1.	2.	3.	4.	5.	6.	7.	8.
5	7	10	6	4	4	3	3,

inner branch of the antenna three-jointed, about as long as the last joint of the outer branch, hand of the posterior foot-jaw (fig. 13) elongated, subovate, bearing a rather long seta at the proximal end of the inner margin, and a long, slender, slightly curved terminal claw which is slightly pectinated towards its base. The first pair of feet (fig. 14) have both branches bi-articulate, inner branch much the longer, the first joint quite six times as long as broad, bearing a single seta near the middle of the inner margin, and two much smaller ones towards the distal end of the outer margin; terminal joint very small, bearing two slender claw-like setæ, the inner more than twice as long as the outer, the two joints of the outer branch short, stout, and armed with strong marginal spines, one on the first joint, two on the second, which also has three apical setæ; the rest of the swimming feet have both branches three-jointed, with longer and more delicate setæ and less massive spines; fifth pair of feet (fig. 15) short, the first joint broad, truncated, and having five marginal setæ, second joint very small, ovate, with five setæ. Length ·46 mm. Male unknown.

Hab.—This species was taken in tidal pools at Port Erin, Isle of Man, in the spring of 1893.

Genus LAOPHONTE, Philippi.

Laophonte subsalsa, sp. nov. (Pl. II., figs. 1–11).

Body rather stout, with short limbs, abdomen not much more slender than the thorax (figs. 1, 2); caudal laminæ short, scarcely as long as the last abdominal segment, the longest tail-seta about half as long as the body. Antennules of the

female (fig. 3) seven-jointed, rather profusely setose, the comparative length of the joints as follows:

1.	2.	3.	4.	5.	6.	7.
9	10	6	3	4	3	3

Antennæ and mouth-organs normal. Hand of the posterior footjaw (fig. 5) rather elongated, narrow, and angulated near the middle of the outer margin, terminal unguis long, slender, and slightly curved. The first four pairs of feet have the inner branches two-jointed, outer branches three-jointed; in the first pair (fig. 6) the outer branch is about half as long as the first joint of the inner branch, the second joint of the inner branch about one-fourth as long as the first joint, the slender terminal claw fully twice as long as the joint from which it springs; in the second and third pairs of feet (fig. 9) the inner are about half as long as the outer branches; the fourth pair are considerably reduced in size, and the inner branch is smaller than in the preceding pairs (fig. 10); fifth pair (fig. 11) foliaceous, rather short and broad, inner margin of the first joint obliquely subtruncated and bearing five nearly equal setæ, second joint broadly ovate and bearing six subequal setæ, margins of both joints beyond and between the setæ finely ciliated.

Male.—The antennules (fig. 4) are very stout and geniculated as usual in this genus, the feet much the same as in the female, except that the usual slender setæ of the outer branches in the second and third pairs are replaced by stout spines (figs. 7, 8). Length ·46 mm.

I took this species plentifully in brackish pools a little above high-water mark at Dundrum, county Down, in September, 1900; also a few years earlier on the muddy sides of the Glen Estuary, west coast of Donegal.

Genus DACTYLOPUS.

Dactylopus platycheles, sp. nov. (Pl. III., figs. 1–10).

Female.—In general aspect like *D. tisboides* (fig. 1). Antennules very short and rather stout, nine-jointed, first three joints subequal, longer than the rest, but not much longer

than broad, seventh and eighth joints the shortest, fourth, fifth, sixth, and ninth nearly equal (fig. 2). Antennæ (fig. 3) nearly as large as the antennules. very stout, and bearing stout terminal spines, inner branch three-jointed. The mandibles, maxillæ, and anterior footjaws (figs. 4, 5) are in general build similar to those of other species. The hand of the posterior footjaw (fig. 6) is subovate, very stout, and bears a short and stout terminal claw; inner border of the hand indistinctly fringed with short cilia. Branches of the first pair of feet (fig. 7) equal in length, very stout, the terminal claws broad towards the base, flexuously curved and fringed on their concavities with fine cilia; the second joint of the outer branch bears on its inner margin two short proximal and one rather longer distal setæ; the third joint has one long apical seta, two strong apical claws, and two smaller ones on the outer margin; there is a single stout spine on the outer margin of each of the two preceding joints; the first joint of the inner branch is equal in length to the first and second joints of the outer branch, and bears about the middle of its outer margin a single plumose seta; second joint almost obsolete, about as long as the last joint of the outer branch, and armed terminally with two stout claws. The remaining swimming feet (fig. 8) are of the usual type; fifth pair (fig. 9) short and broad, the two joints of nearly equal length, each bearing five or six short marginal setæ. Length ·87 mm. Male unknown.

Hab.—A few specimens of this species—all females—were found in a gathering taken amongst weeds at Roker, August 15th, 1900, at low-water mark of an extremely low tide. They seem to be perfectly distinct from all described species.

Genus HARPACTICUS, M. Edwds.

Harpacticus gracilis, Claus (Pl. IV., figs. 4–12).

Harpacticus gracilis, Claus. Die frei lebenden Copepoden, p. 135, pl. XIX., fig. 20.

? „ „ Kritchagin, Fauna of the Black Sea, p. 40, pl. III., figs. 34–42 (1877).

In most respects like *H. chelifer*, but smaller and much more slender in all its parts.

Female.—The antennules (fig. 6) are extremely slender and very sparingly setiferous, nine-jointed, the relative lengths of the joints being as follows :—

1.	2.	3.	4.	5.	6.	7.	8.	9.
9	9	10	7	3	3	2	1	1

The hand of the posterior footjaw (fig. 7) is very slender, its width at base being equal to about one-third of the length, whereas in *H. chelifer* the width is one-half of the length; the terminal unguis is also longer and more slender than that of *H. chelifer*. The first four pairs of feet of the two species are alike, except that those of *H. gracilis* are more slender, and have a much more delicate setose and spinous armature (fig. 8). The fifth pair has the terminal joint narrower and more elongated (fig. 12). The ovisacs are remarkably small, containing usually only three or four large eggs.

Male.—The male is smaller and less robust than that of *H. chelifer*, but is not otherwise distinguishable. The spinous prolongation of the inner branch of the second foot (fig. 10) is, however, longer than in *H. chelifer*.

The only examples of this species which have come under my notice are contained in a tow-net gathering made in Roundstone Bay in 1871 by myself and my late friend Dr. David Robertson. These had been overlooked—probably confused with *H. chelifer*—until a recent overhaul of the collection brought them to light. They agree completely with the description and single figure of *H. gracilis* given by Dr. Claus, who, however, does not describe the male; and so far as I am aware the species has not been observed by any other author, unless doubtfully by Kritchagin (*loc. cit.*) in the Black Sea. The figures given by that author are, however, scarcely recognizable, and his memoir being written in Russian, I am unable from the description to form any opinion on the matter.

Genus MONSTRILLA, Dana.

? Monstrilla grandis, Giesbrecht (Pl. IV., figs. 1–3).

1892. *Monstrilla grandis*, Giesbr., Pelagischen Copepoden des Golfes von Neapel, pp. 586, 588.

1894. „ „ Timm, Copepoden und Cladoceren der südöstlichen und östlichen Nordsee, p. 378, pl. V., fig. 4.

The single specimen here referred to is so much battered and mutilated that it would be useless to attempt a description. The separate parts are as far as possible figured in Pl. IV. I scarcely doubt that it belongs to *Monstrilla grandis*, Giesbrecht, though it might also fairly be referred to *M. intermedia*, Kritchagin, which is possibly identical with *M. grandis*. No example of this extremely interesting genus has, so far as I know, been hitherto found on the East Coast of Britain, though it occurs not very uncommonly in the English Channel (*M. anglica*, Lubbock), and on the eastern part of the North Sea at Heligoland (*M. helgolandica*, Claus). I am indebted to my friend I. C. Thompson, Esq., F.L.S., of Liverpool, for specimens of another genus (*Thaumaleus Thompsoni*, Giesbrecht) which is scarcely distinguishable from *Monstrilla*. This species seems to be widely distributed—Isle of Man, Falkland Islands, Mediterranean. In the year 1880 when my Ray Society "Monograph of the British Copepoda" was published I had not seen any specimen of either genus. Sir John Lubbock had described his *Monstrilla anglica* from a single specimen which had unfortunately been lost, and I had to be content with reproducing his drawing of that species. Since that time several other species belonging both to *Monstrilla* and *Thaumaleus* have been described by Mr. Bourne and Mr. Thompson in this country, and by Giesbrecht, Timm, and others abroad. It was early noticed that the animals, though extremely muscular and powerfully limbed, were entirely destitute of alimentary canal and mouth-organs, the mouth being represented at the most by a very small

crateriform opening—this condition seeming to point to a parasitic life. Various hypotheses were put forward, but it was reserved for Professor A. Giard, of Paris, to discover the real host of the parasite in certain annelids belonging to the genus Polydora. Polydora is a marine worm which builds and lives in, a leathery tube. One of M. Giard's specimens of *Thaumaleus* was found just inside the tube, clasping the body of the worm, others in the body-cavity of the worm itself, which seems to be the normal position. The life-history remains to be worked out, but it seems probable that after hatching from the egg the young *Thaumaleus* finds its way through one of the nephridial pores of the annelid into the body-cavity, there attaining its adult form, after which it escapes, produces and discharges its reproductive cells, and seeing that owing to the absence of alimentary organs it cannot feed, must soon die.

The specimen here noticed was found in a bottom-net gathering made at Cullercoats in July, 1900. It would appear that it is in the warmer months of the year that free-swimming specimens are usually taken.

It may be well here to give the diagnostic characters of the family and of its two genera, according to Giesbrecht.

Fam.—*Monstrillidæ*.

"Ampharthrandria" in which the hinder antennæ, mandibles, maxillæ, maxillipeds, and rostrum are wanting in both sexes; the eggs of the female borne in a forked process springing from the ventral surface of the genital segment, which in the male forms a process ending in two projections; abdomen of the male incompletely segmented.

Genus *Thaumaleus*, Kröyer.

Between the genital segment and the furca, in the female only one, in the male, two segments; fifth pair of feet wanting in the male; furca bearing three setæ in the female, in the male three or four. *Female*.—Cephalothorax four-segmented, abdomen three-segmented. Anterior antennæ 3–4 jointed,

with numerous long, stout setæ, some of which are branched. First four pairs of swimming feet with three-jointed branches and a voluminous base; fifth pair rudimentary. *Male.*—Anterior antennæ five-jointed, with a geniculation between the fourth and fifth joints, apex of the genital segment elongated.

Genus *Monstrilla*, Dana.

Closely allied to *Thaumaleus*: mouth placed far back; between the genital segment and the furca there are three segments in the male, but in the female the first of the three is incompletely separated or quite coalescent; the fifth pair of feet in the male is in the form of a tolerably long bristle (or a stump); the apex of the genital segment in the male short in comparison with its ordinary-sized base; furca in both sexes with five or six setæ.

EXPLANATION OF PLATES.

Plate 1.

Ameira amphibia. ♀

Fig. 1. Female seen from left side × 140.
2. Antennule
3. Inner branch of antenna } × 300.
4. Mandible
5. Maxilla } × 440.
6. Anterior footjaw
7. Posterior footjaw
8. Foot of first pair
9. ,, third pair } × 300.
10. ,, fifth pair
11. Last abdominal segment and furca × 240.

Cyclops eboracensis. ♀

12. Antennule
13. Foot of first pair } × 240.
14. Caudal lamina

Pseudothalestris monensis. ♀

15. Foot of third pair } × 240.
16. Antennule

Plate 2.

Laophonte subsalsa.

Fig. 1. Male seen from above
2. ,, ,, right side } × 140.
3. Antennule of female
4. ,, male } × 300.
5. Posterior footjaw
6. Foot of first pair
7. ,, second pair ♂
8. ,, third pair ♂
9. ,, third pair ♀ } × 240.
10. ,, fourth pair ♀
11. ,, fifth pair ♀

Paratachidius inermis. ♀

12. Antennule × 240.
13. Antenna × 320.
14. Posterior footjaw × 320.
15. Foot of first pair × 240.
16. Abdomen and tail × 140.
17. A furcal lamina × 300.

Plate 3.

Dactylopus platycheles. ♀

Fig. 1. Female seen from left side × 84.
2. Antennule × 240.
3. Antenna × 320.
4. Maxilla × 350.
5. Anterior footjaw × 320.
6. Posterior footjaw × 240.
7. Foot of first pair
8. ,, second pair } × 240.
9. ,, fifth pair
10. One half of furca with setæ × 240.

Pseudothalestris monensis. ♀

11. Female seen from right side × 110.
12. Antennule × 260—(variety)
13. Posterior footjaw × 350.
14. Foot of first pair × 350.
15. ,, fifth pair × 240.
16. Abdomen and furca × 140.

Plate 4.

Monstrilla grandis. ♂

Fig. 1. Male (somewhat distorted) × 40.
2. Foot of fourth pair × 84.
3. Abdomen. *a. a.* testes × 84.

Harpacticus gracilis.

4. Female seen from left side × 84.
5. Abdomen and fifth pair of feet ♂
6. Antennule of female
7. Posterior footjaw
8. Foot of first pair
9. ,, third pair ♀
10. ,, second pair ♂
11. ,, third pair ♂
12. ,, fifth pair ♀

} × 240.

Paratachidius inermis. ♀

13. Foot of second pair
14. ,, fifth pair

} × 240.

Postscript.

Since the foregoing was in print I find that Mr. T. Scott has noted the occurrence of *Monstrilla* in the Firth of Forth, and the same observer has also found it—though not as yet recorded—in the Moray Firth.

Paratachidius (p. 58).

This generic name was proposed in 1873 (Ann. and Mag. Nat. Hist., ser. iv., vol. xii., p. 131) by Brady and Robertson, but was afterwards withdrawn as being identical with *Mesochra*, Boeck. I now propose to restore the name for an allied form—*P. inermis*.

IV.—*Biographical Notes on the Early Botanists of Northumberland and Durham.* By J. G. Baker, F.R.S., F.L.S.

These notes on the early workers at botany in the north-eastern counties of England are put together at the instigation of the late Mr. Richard Howse. I gave a similar sketch of the Yorkshire botanists in my presidential address at the Barnsley meeting of the Yorkshire Naturalists' Union in 1884, which is printed in the first volume of their botanical transactions pp. 185–201, and for Cumberland and Westmorland in my "Flora of the English Lake District," also published in 1885. To some extent the present paper will relate to the same men as those who worked the adjoining counties, but in other cases those who have collected in Northumberland and Durham have not extended their researches beyond the limits of the two counties. The botanists fall naturally into two groups, those who lived before Linnæus, and those who lived and wrote after the introduction of the binominal nomenclature.

Part I.—THE PRE-LINNEAN AUTHORS.

William Turner, born about 1510, died 1568. The title of the Father of English Botany may be justly claimed for William Turner, who was born at Morpeth about the year 1510. Under the patronage of Lord Wentworth he was sent to Pembroke Hall, Cambridge, where he took his B.A. degree in 1529–30, and his M.A. in 1533. He was appointed Junior Treasurer of his College in 1532, a Fellow in 1531, and took Holy Orders in 1536–7. Writing in 1568, he says (I have modernised the spelling), "For I am able to prove, by good witnesses, that I have about thirty years ago written an Herbal in Latin, wherein were contained the Greek, Latin, and English names of so many herbs and trees as I could get any knowledge of, even being yet Fellow of Pembroke Hall, in Cambridge, where I could learn never one Greek, neither

Latin, nor English name, even amongst the Physicians, of any herb or tree, such was the ignorance in simples at that time." The herbal to which he refers is entitled "Libellus de re herbaria novus," and was published in London in 1538. It is a small quarto of 20 pages, and is a first attempt to match the names under which plants are known in English, with their Greek and Latin equivalents. It is written in Latin, and makes mention of 144 classical names arranged in alphabetical order. The book is very rare, and was reprinted in *fac-simile* in 1877 by Mr. B. Daydon Jackson, Senior Secretary of the Linnean Society, from a copy in the library of the British Museum, accompanied by an excellent biographical sketch, and a list of the plants under their present Latin names. At Cambridge Turner was thrown into association with Ridley and Latimer, and embraced the doctrines and practises of the Reformers with great ardour. He became a travelling preacher and a writer of controversial religious pamphlets. It ended in his being imprisoned and afterwards banished, and in the last year of the reign of Henry the Eighth his writings were prohibited, and ordered to be destroyed. He fled to Italy, where he studied botany under Ghinus at Bologna, and took the degree of Doctor of Medicine. After visiting Basle, where the great herbal of Fuchsius (896 pages, 512 woodcuts) was published in 1542, and Cologne, where he in common with the other Protestant refugees was assisted with money from Bishop Ridley, he returned to England shortly after the accession of Edward the Sixth. Whilst waiting for clerical preferment he became physician to the Protector Somerset. In 1548 he issued his second botanical book, which is written in English, and is entitled, "The Names of Herbes, in Greke, Latin, English, Duche, and Frenche, with the commune names that Herbaries and Apothecaries use." This covers the same ground as the Libellus, but is greatly extended, and contains more than 400 classical headings to the paragraphs. Sometimes he refers to local Northumbrian names as "Lucken gollande" for *Caltha palustris*, "Spere grass" for *Carex*, "Newe Chappel floure"

for *Orobanche rapum*, and "Redes" (Durham) for Horse Radish. This book also is very rare, but was reprinted in 1881 for the English Dialect Society, under the editorship of Mr. James Britten, of the Natural History Museum, South Kensington. In 1549–50 Turner was appointed Prebendary of Botevant, York, and after two years Dean of Wells. A letter is preserved in which he complains bitterly to Cecil of the difficulties he encountered in obtaining possession of his deanery, which the dispossessed Dean, whose name was Goodman, refused to surrender. The first part of his *magnum opus*, the "New Herball," was published in London in 1551. At the accession of Mary his works were for the second time prohibited and ordered to be destroyed. He fled to Cologna, where the second part of his Herbal was issued in 1562. He lived to return again to England at the accession of Queen Elizabeth, and to publish the third part of his Herbal, with a reprint of the first and second parts, shortly before his death in 1568. The Herbal is a folio volume of nearly 500 pages, with numerous woodcuts interspersed in the text. He does not often give localities, but mentions *Paris quadrifolia* as having been gathered by himself near Morpeth, and *Artemisia maritima* on Holy Island. He wrote also on the names of Birds, and treatises on the Baths of England, and the different kinds of wine. Mr. Jackson gave a list of 39 works certainly written by him, and several others that are doubtful. The principal authors of botanical books on the Continent who were contemporary with Turner were Dodenæus in Belgium, Brunfels and Fuchsius in Germany, and Matthiolus in Italy. The great work of Tabernæmontanus, containing 2,255 figures, did not appear till 1590. Linnæus named after him the genus *Turnera*, which gave its name to the small natural order *Turneraceæ*.

Thomas Penny, born about 1530, died 1589, was the first to collect *Cornus suecica* on Cheviot, and sent *Doronicum pardalianches* (which is not a native of Britain) to Gerarde from the "cold mountains of Northumberland." He studied at Cambridge, and became a Doctor of Divinity and Dean of

St. Paul's, and was also a Fellow of the Royal College of Physicians. He travelled extensively both in Britain and on the Continent, and was highly esteemed by his contemporaries. Gerarde calls him a "second Dioscorides," and Clusius named after him a *Hypericum* he collected in the Balearic isles. He was also distinguished as an entomologist.

John Ray, born 1627, died 1705. For a century after the death of Turner nothing material was added to our knowledge of the botany of Northumbria. The English writers of that period, Lobel, Gerarde, and Parkinson, do not appear to have visited Northumbria. Johnson, writing in 1641, gives as plants of Northumberland, in addition to *Doronicum*, *Lycopodium clavatum* from Cheviot, *Mertensia maritima* from "the salt-pans between Barwicke and the Holy Island," *Vaccinium vitis-idæa* "from the wilde moores of Northumberland," and *Angelica satina*, by which he probably intends *Ligusticum scoticum*, from "amongst the rocks not far from Barwicke." During the last fifty years of the 17th century, during the reigns of Charles the Second, James II., and William and Mary, the progress of botany is closely connected with the name of John Ray, and it is to him we first owe the separation of the Monocotyledons from the Dicotyledons. Ray was the son of a blacksmith, who lived at Black Notley, in Essex. At the age of sixteen he was sent to Cambridge, where he made such excellent progress and was esteemed so highly, that in 1651 he was appointed lecturer in Greek in Trinity College, in 1654 lecturer in Mathematics, and in 1659 College Steward. His attention was first drawn to natural history as a recreation in the intervals of his severer studies. In 1660 he published his first botanical work, a catalogue of the wild plants of the neighbourhood of Cambridge, in which upwards of 600 kinds are enumerated. It met with a favourable reception from the younger collegians, and led to his acquaintance with his principal patron and fellow-worker, Francis Willoughby, the son of a gentleman of considerable fortune, whose estate was in Warwickshire. In 1661 they undertook together what was then considered a long journey

of exploration, passing through Durham and Northumberland, as far north as Stirling and Glasgow, and returned by Westmorland, Ray attending specially to plants, and Willoughby to birds. A full account of what they saw is printed in Ray's "Itineraries," the portion devoted to Durham and Northumberland occupying eight pages (178 to 185) in Derham's "Life of Ray." They visited Stockton, Durham, Newcastle, Morpeth, Alnwick, and Berwick. Ray had been ordained as a clergyman, but when the Act of Uniformity came into operation he refused to sign, and was in consequence expelled from his college, and this led to his devoting the rest of his life mainly to natural history. In 1663 Ray, Willoughby, and two others paid a long visit to the Continent, not returning till 1666. In 1668 they made a second journey into the North of England. In 1670 he published his "Catalogue of English Plants," and in 1671 they made a third journey to the North of England, accompanied by Thomas Willisel,* an uneducated man who worked a great deal for them and others as a collector. In this journey they collected *Asperugo procumbens* on Holy Island, *Mertensia maritima* at Scremerston, and *Diplotaxis tenuifolia* and *Sisymbrium Irio* on the walls of Berwick, and made a list of the birds that breed on the Fern Islands. In 1672 Willoughby died suddenly in the prime of life, leaving to Ray the task of educating his two sons, and working out his unfinished treatises on birds and fishes. These tasks Ray faithfully performed, and then, turning to botany again, published in 1690 the first edition of his "Synopsis of British Plants," which forms the first solid foundation of all succeeding floras of the island. Volumes I. and II. of his great "Historia Plantarum," a history of all known plants, were published in 1686 and 1687, and a third volume, which is mainly a compilation, seven years later. The three volumes average a thousand folio pages each.

* Thomas Willisel collected not only for Ray and Willoughby, but also for Merrett, Morison, Sloane, and the Royal Society. He is said by Britten and Boulger to have been a native of Lancashire, to have served as a soldier under Cromwell, and to have travelled all over the United Kingdom. Besides the plants already mentioned he regathered *Cornus suecica* on Cheviot, and gathered *Trientalis europæa* beyond the Roman Wall five miles north of Hexham, and on the moors west of Harbottle.

The final draft of his "Methodus Plantarum" was published in 1703. This contains the foundation of the natural system used at the present day, which, after lying dormant for nearly a century, was revived and expanded by Jussien during the stormy days of the great French Revolution. A third edition of Ray's "Synopsis" was published in 1724 by Dillenius, the first Sherardian professor of botany at Oxford. In this there is a notice of the occurrence of *Rhinanthus major* at Wood Newton, near Berwick, collected by Dr. Richard Richardson of Bingley.

Thomas Lawson, born 1630, died 1691. Ray's principal correspondent in the North of England was Thomas Lawson, who, in 1688, sent him a catalogue of the localities of nearly 200 rare plants, which was used by Ray in the second edition of his synopsis, and is printed in full in Derham's "Life of Ray" (in 1718, page 213), and again in the volume of Ray's "Life and Letters," issued by the Ray Society in 1848 (pages 197–210), with the old names translated into modern ones by Professor Babington. Lawson was born in 1630, was a member of the well-known Cumberland family of that name, was educated at Cambridge, and when of age was ordained Minister of the Church of England at Rampside, in Low Furness. In 1652 George Fox visited the district, and was kindly received by Lawson, who lent him for a day his church and pulpit. Fox preached in it with such effect that Lawson and many of his congregation became Quakers. Of course he had to resign his living. He then settled as a schoolmaster at Great Strickland, a few miles south of Penrith, where he was much esteemed by the Lowthers and other neighbouring gentry. He died in 1691, and his grave, with a large tombstone which one of his pupils erected to his memory. may still be seen in a small lonely graveyard, overgrown with fir trees, belonging to the Friends, near Newbyhead. He botanized principally in Westmorland and North Lancashire, but the following list will shew that he had also travelled widely in the two North-Eastern counties. (I have given only the modern names).

Sagina maritima? Whinney-field bank by Cullercoats.

Listera cordata. By the Picts' Wall, in Northumberland.

Bryonia dioica. Near Darlington, all along the horseway to Thornton.

Helminthia echioides. Between Stockton and Norton.

Centaurea Calcihapa. Between the Glass houses and Dent's hole, nigh Newcastle-upon-Tyne.

Lathyrus Nissolia. Same locality as the last, *copiose.*

Chara hispida. In Hell Kettles, nigh Darlington.

Eryngium campestre. On the shore called Fryer's Goose, near Newcastle-upon-Tyne.

Glaux maritima. Same locality as the last.

Daphne laureola. By Thornton, in the bishopric of Durham.

Anthriscus vulgaris. On mud-walls at Blackwell, in the bishopric of Durham.

Potentilla fruticosa. By Mickle Force, in Teesdale, *copiosissime.*

Reseda lutea. By Clifford's Fort, at Tinnemouth Castle.

Senecio viscosus. About Sunderland.

This list is the first substantial catalogue of the rare plants from the North of England which we have, and contains the first account of plants introduced by ballast. There is a letter in Richardson's correspondence from Lawson, written the year before his death, offering to meet him at Settle for a botanical exploration. Besides this catalogue he wrote numerous controversial religious works. The genus *Lawsonia* was named by Linnæus after another Lawson, a Scotchman.

John Wilson, died 1751, was a native of Kendal. He was a man in humble circumstances, according to various accounts a stockinger, a shoemaker and a baker, who became an enthusiastic botanist, and educated himself so that he became a lecturer on botany, in which capacity he often visited Newcastle, where his book, a "Synopsis of British Plants in Mr. Ray's Method," was published in 1744. It is an octavo of 272 pages, and contains a synopsis in English of all known species, with the exception of the lower cryptogamia, grasses

and trees, and is prefaced by an illustrated definition of botanical terms. He gives a large number of original localities, amongst which the following belong to the two North-Eastern counties, viz., *Zannichellia palustris*, *Salicornia herbacea*, *Polygonum bistorta*, *Carduus nutans*, *Cerastium arvense*, *Eryngium campestre*, *Salvia verbenaca*, *Veronica hederifolia*, and *Galeopsis versicolor* near Newcastle, *Scutellaria galericulata* at Stella, *Astragalus glycyphyllus* at Newburn, *Sagina maritima* at Cullercoats, *Smyrnium olusatrum* by Tynemouth Castle, *Gnaphalium sylvaticum* between Conside and Shotley Bridge, *Pastinaca sativa* at Sunderland, *Vicia sylvatica* at Pelaw Wood near Durham, *Pyrola minor* in Tacket Wood near Simonburn, *Polygonum viviparum* at the lead mines by the Tees near Cotherstone, and *Saxifraga stellaris* on the mountains near Fleet Bridge in the county of Durham. Pulteney tells an amusing story of how he was sorely tempted to sell his wife's only cow to buy a copy of Morison's "Historia Plantarum," and how a benevolent lady heard of this and made him a present of the book. Winch quotes the following obituary notice of him from the "Newcastle Journal" of July 27, 1751 : "We hear from Kendal that last week, died there, Mr. John Wilson, a noted botanist of that place, and author of a "Synopsis of British Plants after Mr. Ray's Method." He had uncommon natural parts, which (without the advantage of a learned education) by his own industry in study and application he had so much improved as to become perhaps one of the most knowing herbalists of his time, and was besides a most facetious and agreeable companion, of a just, ready, wit, a quick discernment, a firm integrity, and candid intention, which made him vastly beloved by all his friends and acquaintances, who deeply regret the loss of so valuable a man." Robert Brown named after him the Australian genus *Wilsonia*, in Convolvulaceæ, and calls him "*auctor operis haud spernandi.*"

Part II.—BOTANISTS AFTER LINNÆUS.

Linnæus was born in 1707, and died in 1778. He reformed botany by establishing the binominal nomenclature, giving short concise definitions to genera and species, establishing classes and orders founded on a single easily perceptible character, and greatly improving terminology. His "Species Plantarum" was published in 1753, and a second edition in 1762, and his "Genera Plantarum," first edition, in 1737, and second in 1742.

The first author to work out the British flora according to the ideas of Linnæus was William Hudson, the first edition of whose "Flora Anglica" was published in 1762, and the second in 1778. After the publication of this work the binominal nomenclature was universally used in England.

Rev. John Wallis, born 1715, died 1793. The well-known "Natural History and Antiquities of Northumberland" was published in two volumes folio in 1769. The first volume contains a long list of rare plants and their localities, principally of species noted by the author himself in Tynedale. These are omitted from Turner and Dillwyn's "Botanists Guide" of 1805, but are fully cited in Winch's Flora. In a few cases Wallis mistook the name of his species, but generally he is quite reliable, and his list may be considered as the first substantial foundition of the flora of the county.

Stephen Robson, born 1741, died 1779, published in 1777 a book entitled "The British Flora" (8vo, 330 pages). This is in English, being in fact our first native flora written in English in which the binominal nomenclature is used, two years earlier than the first edition of Withering's "Botanical Arrangement." It contains a synopsis of all the plants of Britain (Cryptogamia included) arranged according to the system of Ray, not after the Linnean classes and orders, with an introduction containing an illustrated definition of technical terms, and a comparison of the systems of Cæsalpinus, Ray, Tournefoot, and Linnæus, and a preface containing a short

history of botany. He does not say much about localities, but mentions a few plants as growing near Darlington, and is the first to record the Ladies Slipper (*Cypripedium Calceolus*) from Castle Eden Dene. He was a native of Darlington, a member of the Society of Friends, and followed his father's business as a linen manufacturer. He died of pulmonary consumption at the early age of 38. The manuscript of his flora and his herbarium, in three folio volumes, were lately in the possession of his descendants. The late Edward Capper Robson, of Sunderland, was his grandson.

Edward Robson, of Darlington, born 1763, died 1813, nephew of Stephen Robson, was one of the most active English botanists of his generation. Sowerby, to whom he sent living specimens of *Pinguicula vulgaris* and other plants to be drawn for "English Botany," calls him "a very assiduous and accurate botanist." When the Linnean Society was founded in 1789 he was the only representative of Northumberland and Durham on its list of members, having been chosen as one of the original "Associates," the number of which is limited to fifty. He printed for private circulation a list of rarer Durham plants under the title of "Plantæ rariores agro Dunelmensi indigenæ." This is often quoted by Turner and Dillwyn and in Winch's "Botanists' Guide." His field of observation was the low-lying eastern part of the county about Darlington, Durham, Sunderland, and Hartlepool. He contributed to the third volume of the Transactions of the Linnæan Society a paper illustrated by a figure of a new kind of Currant he had found on the banks of the Tees between Pierce Bridge and Gainford, which he called *Ribes spicatum*. He is often cited as an authority for localities of Fungi near Darlington in the second volume of Winch's "Botanists' Guide," and contributed a figure of *Geasta* to the "Gentleman's Magazine," February, 1792. Spach named after him the genus *Robsonia* in *Grossulariaceæ*, which is kept up by Bentham and Hooker as a section of *Ribes*. He died at Tottenham, and was buried beside George Fox in Bunhill Fields.

Rev. John Harriman, born 1760, died 1831, was a native of Maryport in Cumberland. He became Rector of Eglestone and Gainford, and botanised all along the Tees from Darlington upwards. He was the first botanist to collect many of the rarer plants of Upper Teesdale, about the year 1793; for instance *Gentiana verna*, *Tofieldia palustris*, *Elyna caricina*, *Juncus triglumis*, *Vaccinium uliginosum*, *Polystichum Lonchitis*, and *Pyrus Aria*, and on the fells over Eglestone *Malaxis paludosa*. The specimens of *Gentiana verna* which were figured in "English Botany" he says were collected for him by a miner named John Binks. He was elected a Fellow of the Linnean Socicty in 1798. Later he worked hard at Lichens, and corresponded with Acharius and Borrer. The most interesting species he found was *Verrucaria thelostoma*, which is described by Acharius in the second part of Winch's "Botanists' Guide," and is figured by Sowerby in "English Botany," t. 2153. Acharius named after him *Verrucaria Harrimanni*, figured "English Botany," t. 2539. He died at Croft, in Yorkshire, Dec. 3, 1831.

Rev. Jelinger Symons, born 1778, died 1853, published in 1798, when he was only 20 years of age, an octavo volume of 207 pages entitled "Synopsis Plantarum insulis Britannicis indigenarum." It contains brief Latin characters of all the British species then known. He was the first to apply the name of *Scolopendrium vulgare* to the Common Hart's Tongue Fern. He was elected a Fellow of the Linnean Society the same year that his synopsis was published. He was for some time Curate of Whitburn near Sunderland, and sent to Winch in 1807 a considerable list of the rarer plants of that neighbourhood, which is cited in the second volume of Winch's "Botanists' Guide." He became in 1833 Rector of Radnage in Buckinghamshire, where he died in 1853.

William Weighall, of Sunderland, a contemporary of Edward Robson, is distinguished in the history of British botany as being the first person who collected a considerable number of plants introduced by foreign ballast. Of these upwards of 150 species have now been collected and deter-

mined from the ballast heaps about Sunderland, Newcastle, and Hartlepool, but they generally disappear after a short time. Weighall was elected an Associate of the Linnean Society in 1799. He had died, and his herbarium passed into the hands of Winch, when the latter wrote the preface to the first part of his "Botanists' Guide" in 1805.

William Backhouse, of Darlington, born 1779, died 1844, who is cited by Winch in his "Botanists' Guide" as "Mr. W. Backhouse, jun.," and in his Flora simply as "Mr. Backhouse." He collected principally in the neighbourhood of Darlington and Seaton Carew. About the former town he found *Rosa gracilis*, *Stellaria glauca*, *Lolium arvense*, *Ribes nigrum*, and *Ranunculus parviflorus*, this station being the northern limit of the last species in England. About Seaton he found *Lepturus filiformis*, *Hordeum maritimum*, *Galium tricorne*, and *Eryngium maritimum*. He sent to Sowerby the specimens for the figure of *Bromus arvensis* (Engl. Bot. t. 1984), and various other species. He paid some attention to Mosses, and collected near Darlington *Phascum patens*, *bryoides*, and *curvicollum*. His son, also named William Backhouse, who had a fine garden at Wolsingham in Weardale, was a great cultivator of Narcissi, and raised several new garden forms, one of which, an intermediate between *N. pseudo-narcissus* and *incomparabilis*, is called *Narcissus Backhousei*. Another Darlington botanist of the same period was James Jansen, who collected the Darlington Willows, and whose localities first appear in the 1807 volume of Winch's "Botanists' Guide."

Nathaniel John Winch, of Newcastle, born about 1769, died at his house in Ridley Place in 1838. The Augustan age of botany in Northumberland was from 1795 to 1835, and the man who did far more than any one else both to explore personally the two counties and to collect and arrange information obtained from others was Winch. Turner and Dillwyn, writing in 1805, say of Durham (Bot. Guide, vol. i., p. 239), "There is perhaps no other part of England where the study of Botany, and especially the class Cryptogamia,

has of late years been more sedulously cultivated." H. C. Watson, writing thirty years later (New Botanists' Guide, vol. i., p. 319), says, "Mr. Winch's exertions and different works have made us better acquainted with the botany of the extreme north of England than we are with that of any other equally extensive portion of the country; and he may fairly claim the credit of having done most to advance the knowledge of local botany." Beginning with the country round Newcastle, he extended his explorations to Teesdale in 1799, and to Cheviot in 1804. In 1803 he was elected a Fellow of the Linnæan Society. "The Botanists' Guide through the counties of Northumberland and Durham," the first volume of which was published in 1805 (the preface being signed N. J. Winch, John Thornhill, Richard Waugh), and the second in 1807, contains localities for upwards of 900 Flowering Plants and Ferns, 180 Mosses, 28 Hepaticæ, 256 Lichens, 128 Algæ, and 318 Fungi. In naming the Mosses and Lichens he had the help of Turner, and, in the Lichens, of Acharius. At the present time, taking Mr. Watson's estimate of the Flowering Plants and Ferns of the whole of Britain at 1,435, about 950 can be claimed as natives of the two counties, excluding, of course, the 150 ballast plants. About 1806 the three authors of the Botanists' Guide presented to the Natural History and Philosophical Society of Newcastle a herbarium of 700 species, arranged after Sir J. E. Smith's "Flora Britannica." He corresponded also with Smith, Withering, and Sowerby, and added to the British flora *Pyrola media* and *Erythræa littoralis*. His "Essay on the Geographical distribution of plants through the counties of Northumberland, Cumberland, and Durham," was published, the first edition in 1819, and the second in 1825. This was translated into German in the 20th volume of the periodical called the "Flora" in 1837. His *magnum opus* "The Flora of Northumberland and Durham" (159 pages quarto) was laid before the Natural History Society in 1831, and the final "Addenda" carry up the information to 1836. Besides he published 22 smaller papers, several of which relate to geology, a list of which will be found in the

Catalogue of the Royal Society. Alphonse De Candolle named after him the genus *Winchia* in Apocyneæ, "*Nomen in honorem clar. N. J. Winch, qui de geographiæ botanicæ optime disseruit.*" He acted from 1816 to 1838 as secretary of the Newcastle Infirmary. His herbarium, which contains 20,000 specimens, is now at the Newcastle Museum.

John Vaughan Thompson, Surgeon to the 37th Regiment. published in 1807 a catalogue of plants growing in the vicinity of Berwick-on-Tweed (132 pages, 8vo). It is arranged after the Linnean system, and includes a small number of Cryptogamia. It is often cited in Winch's Flora. Dr. Thompson also collected in Jamaica and Madagascar. Robert Brown named after him the genus *Thompsonia* in Passifloreæ, which by Bentham and Hooker is reduced to *Deidamia*, Thouiars.

John Thornhill and John Thornhill, Jun., are occasionally cited as the authorities for stations near Newcastle, both in Winch's "Botanists' Guide" and "Flora." The elder Thornhill signs the preface of the former in company with Winch and Waugh, and united with them in 1806 in preparing a type herbarium for the Literary and Philosophical Society. The younger Thornhill was for many years librarian to this Society, and lectured on botany at the Newcastle School of Medicine. Wilson named a *Phascum* collected near Newcastle in 1841 *P. Thornhillii*, but afterwards reduced it to a variety of *P. bryoides*. In Dixon and Jameson's Handbook it stands as *Pottia bryoides* var. *Thornhillii*, Brathio.

Richard Waugh died 1806. Of this botanist I know very little. He united with Winch and Thornhill in the "Botanists' Guide" of 1805, but died before the second volume was published in 1807. He stands as the authority for very few localities.

James Backhouse, born 1794, died 1869, in early life lived at Darlington, from which neighbourhood a few localities are given on his authority in Winch's "Flora." He was apprenticed to a chemist, but his health broke down with the confinement, and he became, in partnership with his brother,

a nurseryman at York. He travelled as a Minister of the Society of Friends in Norway, Cape Colony, Mauritius, and Australia. Hooker and Harvey named after him the Australian genus *Backhousia* in Myrtaceæ. In company with his son, also named James Backhouse (born 1825, died 1890), he frequently visited Teesdale, where they discovered several plants not known there before (*e.g. Arenaria uliginosa*, *Polygala uliginosa*, *Saxifraga hirculus*, *Senecio campestris*, *Woodsia ilvensis*, *Equisetum umbrosum*, *Viola arenaria*, and *Myosotis alpestris*), and explored the bone-caves. James Backhouse, jun., is best known to botanists by his excellent "Monograph of the British Hieracea," in which several new species are described, and his contributions to the Phytologist. His grandson, also named James Backhouse, best known by his "Handbook of the Birds of Europe," has lately written a guide to Teesdale, with a very good map.

Dr. George Johnson, of Berwick-on-Tweed, born 1797, died 1855, was one of the founders of the Berwickshire Field Club. He published in 1829–31 a "Flora of Berwick." The first volume with 2 plates, 256 pages, contains the Phanerogamia, and the second, 335 pages, 8 plates, the Cryptogamia, which are very fully worked out. This, of course, is often cited in Winch's "Flora." His "Botany of the Eastern Borders," published in 1853 (8vo, 336 pages, 18 plates) is a very interesting and readable book, with a great deal of information about folk-lore, local names, and the general features of the country. These two books, of course, only overwrap in part the northern tract of Northumberland. Dr. Johnson did valuable work in other fields of natural history.

William Robertson, of Newcastle, who died about 1840, was specially interested in Lichens and Roses. The two most interesting species of the former he found were *Endocarpon euplocum* (Eng. Bot. 2602, fig. 2) on sandstone rocks by the Tyne above Newcastle, the only known English station, and *Lecanora aipopsila* (Eng. Bot. Suppl. 2662, fig. 2) found in 1831 on rocks at Bambrough and Staples island.

Borrer calls him "A very accurate investigator of Lichens." I called *Rosa involuta* var. *Robertsoni*, a Rose he found in Heaton Dene. His plants also are at the Newcastle Museum. His name is first cited by Winch as an authority for the occurrence of *Anthriscus cerefolium* near Gateshead in 1807.

Sir W. C. Trevelyan, Bart., of Wallington, born 1797, died 1879, is often cited in Winch's "Flora" as an authority for plants in the Wansbeck country. He also visited Teesdale, where he discovered *Epilobium alpinum* and *Diphyscium foliosum*. He is best known to botanists by his paper on the botany of the Faroe Islands, published in 1835. Greville named after him a pretty little fungus, which is now called *Diderma Trevelyani*, Fries. Other members of his family were interested in botany. Sir John Trevelyan is given by Winch as the finder of what we now call *Nuphar intermedium* in Chartner's Lough, and Miss Emma Trevelyan as the discover of *Linnæa borealis* in a plantation at Catcherside.

John Hogg, of Norton, near Stockton-on-Tees, born 1800, died 1869, contributed an appendix on Natural History to Brewster's "History of Stockton" in 1827. This is often cited in Winch's "Flora" and by Watson in "New Botanist's Guide."

Robert Embleton, born at Berwick-on-Tweed 1806, died at Beadnell 1877, was a fellow student at Edinburgh of H. C. Watson and Sir Walter Trevelyan. He became a surgeon, and settled at Embleton, near Alnwick. He was one of the original members of the Berwickshire Field Club. He is often cited in Winch's "Flora" as an authority for localities near Alnwick, and checked for Mr. Watson a catalogue, now at Kew, of plants seen within three miles of Embleton. His paper on *Maianthemum bifolium* will be found in the Transactions of the Berwick Club for 1849. He was also a zoologist, and wrote several zoological papers.

R. B. Bowman, of Newcastle and Richmond, in Yorkshire, died 1882, is often cited as an authority for localities in Winch's "Flora" and Watson's "New Botanist's Guide."

He travelled in Norway, and sent many plants, both to Sir W. J. Hooker and H. C. Watson, whose herbarium is now at Kew. He added *Phascum Floerkeanum* to the British flora, collected in 1840 on the coast near Marsden. His most active collecting time was between 1830 and 1840.

John Storey, of Newcastle, died 1859, was secretary to the Tyneside Club from 1849 to 1857. He intended to have written a new flora of the two counties, an undertaking which after his death was transferred to Dr. G. R. Tate and myself. His herbarium after his death became the property of the Blyth Mechanics' Institute, and unfortunately was destroyed when my house was burnt down in May, 1864. He sent, however, specimens of most of the interesting plants he found to H. C. Watson, and these are now at Kew. He did not begin to collect till after the date of Winch's "Flora." He checked for Mr. Watson a catalogue of plants that grow round Newcastle for use in "Topographical Botany." He also sent plants to the distributions of the Botanical Society of London. His most interesting find was *Ballota ruderalis* near Hartley.

John Thompson, born 1778, died 1866, of Crowhall Mill, and afterwards of Newcastle, collected actively between 1830 and 1860. His name is often cited as an authority for localities in Winch's "Flora." His best discoveries were *Carex irriqua* on Muckle Moss and *Hieracium prenanthoides* by the Allen near Staward Peel.

William Richardson, born 1797, died 1879, was a saddler of Alnwick. He was for many years an active member of the Botanical Exchange Club. He added *Psamma baltica* to the British flora in 1871 (Ross links, near Belford, was its locality), and added *Rosa micrantha* and *syslyla* to the Northumbrian flora. He had a nephew who was a promising botanist, who died at an early age.

Dr. George Ralph Tate, born 1835, died 1874, my colleague in the preparation of the "New Flora," was a native of Alnwick. He was by profession a surgeon in the army,

and made a collection in China, which he presented to the Kew Herbarium. He had an excellent knowledge of the flora of Cheviotland, and checked a catalogue for Mr. Watson for use in "Topographical Botany." After his marriage he retired from the army, and lived for some time at Freshwater in the Isle of Wight. He became a Fellow of the Linnean Society in 1869. He died at Fareham, Hants.

Dr. Richard Spruce, born 1817, died 1893, is well known by the large collections he made in South America. His papers on the Mosses and Hepaticæ of Upper Teesdale will be found in the Annals of Natural History, 1846, p. 191–203, 271–283, and in the Transactions of the Edinburgh Botanical Society, vol. ii. (1846), p. 65–89.

I have not attempted to include in these notes our living botanists. In conclusion, I should like to express my indebtness, especially as regards exact dates, to Britten and Boulger's "Biographical Index of British Botanists."

V.—*Report on Dredging and other Marine Research off the North East Coast of England in 1901.* By George Stewardson Brady, M.D., LL.D., D.Sc., F.R.S.

Read March 18th, 1902.

The study of local marine fisheries and fishing industries, and of the natural history of fishes generally, which has been prosecuted assiduously for several years back by my valued colleague Mr. Meek, has seemed to me to require larger development than our private means would afford, or than could be supplied by the present equipment of the Marine Laboratory at Cullercoats. With this view I applied to the Royal Society for assistance from the Government Grant which is annually placed at its disposal, specifying as the objects to which I proposed to apply the grant, a research into the nature and distribution of fish-food material off our coasts, and generally the marine zoology of the same area. The sum of twenty pounds for which I asked was granted, and was applied to the expenses of a two days' steam expedition in August last, to the purchase of additional dredging apparatus, and to the expenses of a collector on board of one of the Shields trawlers. The results have, I think, quite justified the expenditure of time and money, and lead one to believe that with further aid, and on a somewhat larger scale, a still more interesting outcome may be looked for.

Mr. Alderman Dent kindly placed at our disposal, on very favourable terms, his steamer "Stanley," an excellent sea-going boat, and in every way admirably adapted for exploring purposes, with comfortable sleeping accommodation for a considerable party, steam-power for hauling up the dredges, and a very willing and obliging crew. In addition to myself, our party consisted of Mr. Meek, Lecturer on Zoology at the Durham College of Science; Mr. Gill, Curator of the Natural

History Society's Museum; Mr. Thomas Brady, of Jarrow; Mr. William Sparkes, of Sunderland; Mr. Gibson, Mr. John Dent, jun., and Capt. Robinson, of Blyth, who kindly accompanied us for the purpose chiefly of taking observations of latitude and longitude. The party assembled at Blyth on the evening of August 20th, and after a comfortable night on the "Stanley," made a start seaward at six o'clock on the morning of the 21st. We took a north-east course for about thirty miles, and put over the dredges and nets for the first haul about 25 miles east of Alnmouth in a depth of 50 fathoms: from this point we drifted and steamed slowly during the day on a south-easterly course, dredging and tow-netting at intervals. Through the night we steamed leisurely southwards, finding ourselves early next morning about fifteen miles east of Sunderland: our course was then changed and we ran northwards, still using at frequent intervals the dredges and nets, and reaching Blyth at an early hour in the evening. The weather was delightful, and the sea in excellent condition during the whole cruise.

One of the chief objects of the expedition was to obtain a better knowledge of the North Sea Plankton. It is evident that the food upon which vast shoals of pelagic fishes such as herring and mackerel subsist, though mostly made up of small animals, must itself ultimately be nourished upon vegetable organisms, or at any rate upon organisms capable of living like plants upon inorganic material. But hitherto no appreciable quantity of plant-life has been found in the North Sea, except close to the shore, in the littoral and laminarian zones. The tow-nets during the "Stanley" cruise were used perseveringly at the surface, at the bottom and at various intermediate depths, but we failed altogether to detect diatoms or living algæ of any other kind. It was only in dredged material that a very few broken fragments of diatom-chains could, with the greatest care, be discovered. But on the other hand our tow-netting completely swarmed, in many cases, with infusoria of the dinoflagellate type, and we are disposed to think that these minute organisms, though not

proved to contain chlorophyll, *are probably holophytic in their mode of life, able to live on dissolved inorganic salts after the fashion of algæ. If this be so they may be taken to occupy a place in the economy of nature similar to that filled in more northern and more southern latitudes by strata of floating diatoms.

The micro-organisms captured by our tow-nets consisted mainly of minute Copepoda and Cladocera—species already well known as belonging to the North Sea fauna; and in addition to these were numerous larval stages of Cirripedes and the higher Crustacea as well as of Polyzoa, Echinoderma, and Annelida. It may be noted, however, that the interesting Actinotrocha stage of Phoronis, taken abundantly the year before last only a few miles from the shore, was on this occasion conspicuous by its absence, only one or two examples having been noticed. In the dredged material there was more of novelty, though we were rather unfortunate in being unable to find a coarse shelly bottom such as is always in these regions most prolific of various forms of life: the dredges almost always came up filled with muddy sand containing considerable numbers of minute Molluscs, worms, and Crustacea, but very little above the grade of what may fairly be called Microzoa. Lists of our captures in the more important departments are given below. For the determination of the Mollusca I have to thank Miss Marie V. Lebour; Mr. Meek has done the Amphipoda, and for the other groups I am myself responsible. My thanks are due also to the Rev. T. R. R. Stebbing, F.R.S., to Mr. Shipley, of Christ's College, Cambridge, to Dr. C. H. Hudson and Mr. Rousselet for examining some doubtful specimens about which nothing definite can at present be said. Some interesting specimens, of which about half-a-dozen have been noticed, may, however, be briefly referred to. These little creatures, mountings of which I show to you, are evidently either rotifers or perhaps

* It may be noted, however, that the preservative solutions in which these gatherings were kept acquired a dusky greenish tint, and on spectroscopic examination gave some of the reactions of chlorophyll, but this is a matter which requires further investigation.

larval forms of some allied group. These mountings have been examined by many naturalists, but no one seems disposed to hazard a decided opinion about them. Mr. Rousselet, however, rather pointedly declines to accept them as rotifers without further evidence. And on the whole the most serviceable advice which I received is, "Catch some more and see what they are like when alive"—more easily said than done however.

Lastly, but by no means least, thanks are due to Mr. Meek for his careful oversight of those preliminary arrangements on which largely depends the success of such expeditions and the comfort of those engaged in them.

The stations at which the dredges were put down during the cruise were as follows :—

(1). 25 miles East of Alnmouth.....50 fathoms.

(2). 29 miles East of Alnmouth.....59 fathoms.

(3). 32 miles East of Alnmouth.....40 fathoms.

(4). 3 miles South-East of Station 3 .....39 fathoms.

(5). Surface net during the night between Stations 4 and 6.

(6). Souter Bank, 16–17 miles off.....39 fathoms.

(7). 2 miles E.S.E. of Station 6 .....39 fathoms.

(8). 5–6 miles off Souter Point.....30 fathoms.

(9). $2\frac{1}{2}$ miles off Souter Point.....21 fathoms.

(10). 70–80 miles out, bottom net, Mr. Sheppard's collection from steam trawler.

Samples of the bottom from these stations have been submitted to Professor Lebour for examination as to their geological and mineralogical characters.

PLANKTON.

The dinoflagellate infusorians to which reference has already been made occurred in all our tow-nettings more or less abundantly, and even more abundantly in similar

gatherings made a month later and at a greater distance from land by Mr. Sheppard, who made a five days' trip with a steam trawler. The species so obtained were as follows :—

Ceratium tripos, Müll.
(both short and long-armed forms).
„ *fusus*, Ehr.
„ *furca*, Ehr.
„ *divergens*, C. & L.
Dinophysis acuminata, C. & L.
Gymnodinium marinum, S. K.

Of these species *Ceratium tripos* was always much the most abundant, but all of the rest occurred in very considerable numbers.

The list, embracing only six species, is short as compared with the fifteen species noted by Aurivillius in his memoir on the Plankton of the Baltic*. There were, however, in our gatherings some few forms of doubtful character which may represent other species.

The other most conspicuous members of the Plankton were chiefly Copepoda belonging to well known species, *Calanus helgolandicus*, Claus†, *Temora longicornis*, O. F. Müller, *Isias clavipes*, Boeck, *Clausia elongata*, Boeck, *Centropages typicus*, Kröyer, *C. hamatus*, Lilljeborg, *Acartia clausii*, Giesbrecht, *Oithona spinifrons*, Boeck, *Anomalocera Patersonii*, Templeton; and with these but in less abundance three Cladocera, *Evadne nordmanni*, Lovén, *Podon polyphemoides*, Leuckart, and *P. intermedius*, Lilljeborg.

* Das Plankton des Baltischen Meeres (Bihang till K. Svenska Vet.—Akad. Handlingar. Band 21. Afd iv. No. 8.—Stockholm 1896).

† This is the form hitherto identified by us and by most naturalists with "*C. finmarchicus*," Gunner, but Professor G. O. Sars believes that Gunner's species was founded upon a larger and more northern form to which the name *finmarchicus* must in future be restricted. The differences, however, are extremely slight.

SPECIES TAKEN WITH THE DREDGE.

MOLLUSCA (Miss Marie V. Lebour).

Anomia ephippium, L., St. 9, several worn specimens.
var. *aculeata*, Müller, St. 6, one.
Nucula nucleus, L., St. 9, one valve.
Leda minuta, Müller, St. 1, a few detached valves.
Pecten opercularis, L., St. 2, 6, several.
Montacuta ferruginosa, Mont., St. 9, several worn specimens.
M. bidentata, Mont., St. 9, a few detached valves.
M. substriata Mont., St. 4, several from the spines of Echinocardium pennatifidum.
Cardium fasciatum, Mont., St. 9, a few small detached valves.
C. exiguum, Gm., St. 9, a few small detached valves.
Astarte sulcata, Da Costa, St. 1, 2, 4, 6, 7, 9, a great many.
A. compressa, Mont., St. 1, several.
var. *striata*, Leach, St. 9, several young specimens.
Venus ovata, Penn., St. 9, a few detached valves of very young specimens.
Mactra elliptica, Brown, St. 9, one.
Scrobicularia alba, Wood, St. 9, several detached valves.
Psammobia ferröensis, Chem., St. 2, one.
Solen pellucidus, Penn., St. 4, 6, a few.
Saxicava rugosa var. *arctica*, L., St. 9, a few.
Chiton cinereus, L., St. 1, one.
Rissoa striata, J. Adams, and var. *arctica*, Lovén, St. 9, several worn specimens.
R. reticulata, Mont., St. 9, one, worn.
R. semistriata, Mont., St. 9, one, worn.
R. soluta, Philipi, St. 4, two.
R. parva, Da Costa, var. *interrupta*, Adams, St. 9, a few worn specimens.
Odostomia Scillæ, Scacchi, St. 9, one.
O. acicula, Philippi, St. 9, several.

O. rufa, Philippi, var. *fulvocincta*, St. 6, two.
O. unidentata, F. & H., St. 9, one.
O. interstincta, Mont., St. 9, one.
Eulima bilineata, Alder, St. 9, one fresh but broken specimen.
E. distorta, Deshayes, var. *gracilis*, St. 4, several.
Natica Greenlandica, Beck, St. 2, 9, a few.
Turritella terebra, L., St. 2, 6, 9, several.
Aporrhais pes-pelicani, L., St. 2, a few.
Buccinum undatum, L., St. 2, one.
Fusus norvegicus, Chem., St. 2, 6, several.
F. islandicus, Chem., St. 1, 2, several.
F. antiquus, L., St. 1, 2, several.
F. gracilis, Da Costa, St. 7, one.
F. propinquus, Alder, St. 2, 4, a few.
Trophon truncatus, Ström, St. 1, one.
Nassa incrassata, Ström, St. 1, 9, several.
Trichotropis borealis, Brod. & Sowb., St. 1, one.
Pleurotoma attenuata, Mont., St. 9, one worn specimen.
P. Trevelyana, Turton, St. 6, one.
Defrancia linearis, Mont., St. 9, a few worn specimens.
Cylichna cylindracea, Penn., St. 9, several small worn specimens.
Dentalium entalis, L., St. 1, 2, 4, 6, 7, 9, a great many.
Philene scabra, Müller, St. 4, two.

CRUSTACEA.

The ground which we dredged was in no case very suitable to the habits of life of the higher (stalk-eyed) Crustacea, and very few of these were seen, none, indeed, but small examples of the commoner species. Worthy of note perhaps are *Hippolyte Cranchii*?, Leach, *Crangon trispinosus*, Hailstone, and *Pandalus brevirostris*, Rathke, from Station 1, *Crangon trispinosus*, *Galathea strigosa*, Lin., *Mysis ornata*, G. O. Sars, and *Leptomysis lingura*, G. O. Sars, from Station 8; the same species of Hippolyte and Crangon occurred also at Stations 6 and 9.

CUMACEA.

Not much has hitherto been recorded respecting the Cumacea of the North Eastern district, and as several species of this interesting group of Crustacea were taken during the "Stanley" cruise, it seems well to include here not only the "Stanley" species, but all those at present known to me as belonging to our North Eastern area. In the following list the "Stanley" stations are indicated by numerals, others are given in full. The nomenclature is that of Sars' "Crustacea of Norway."

Cuma scorpioides, Mont.
30 miles off Sunderland, 45 fathoms; and off Robin Hood's Bay, Yorkshire.

Cuma Edwardsii, Goodsir.
Three miles off Staithes, Yorkshire, dredged.

Hemilamprops rosea, Norman.
St. 4; and in 45 fathoms thirty miles off Sunderland.

Leucon nasicus, Kröyer.
30 miles off Sunderland, 45 fathoms.

Leucon nasicoides, Lilljeborg.
St. 2.

Eudorella emarginata, Kröyer.
Sts. 1, 2.

Eudorella truncatula, Sp. Bate.
Sts. 4, 6, 8.

Eudorellopsis deformis, Kröyer.
In the surface net near Sunderland; and in a depth of 40 fathoms five miles off Red Cliff, Yorkshire.

Diastylis Rathkei, Kröyer.
Sts. 4, 6, 9; plentiful in Runswick Bay, 4–6 fathoms.

Diastylis lucifera, Kröyer.
St. 2.

Diastylopsis resima, Kröyer.
Sts. 4, 6, 7, 8.

Diastyloides biplicata, G. O. Sars.
St. 4, 6, and in 45 fathoms 25 miles off Sunderland, muddy sand.

Diastyloides serrata, G. O. Sars.
Abundant off Runswick, Yorkshire, in 4–6 fathoms.

Leptostylis ampullacea, Lilljeborg.
In a depth of 40 fathoms 30 miles off Sunderland.

Pseudocuma cercaria, Van Beneden.
Sts. 4, 8, 9. In a depth of 4 fathoms off Seaton Carew abundantly, 25 fathoms off Hawthorn, 17 fathoms off Scarborough, and plentifully in the surface net at Sunderland.

Pseudocuma similis, G. O. Sars.
In a depth of 28 fathoms off Marsden.

Petalosarsia declivis, G. O. Sars.
Sts. 2, 4, 6.

Campylaspis rubicunda, Lilljeborg.
St. 6, and off Hawthorn, 25 fathoms.

Campylaspis glabra, G. O. Sars.
Off Marsden, 28 fathoms.

Campylaspis costata, G. O. Sars.
Sts. 2, 4, 6.

Cumella pygmœa, G. O. Sars.
In the surface-net at Sunderland.

Isopoda.

Among the sessile-eyed Crustacea, the group of Isopoda was represented by the following species, most of which are now for the first time recorded as inhabitants of the North Eastern area.

Gnathia maxillaris, M. Edw. (St. 7).

Leptognathia longiremis, Lillj. (Sts. 2 and 8), and in a depth of 4 fathoms off Seaton Carew.

Astacilla longicornis, Sow. (St. 9).

Arcturella dilatata, G. O. Sars (Sts. 3 and 6).

Munna Kröyeri, Goodsir (Sts. 4 and 7).

„ *limicola*, G. O. Sars (Sts. 6 and 9).

Paramunna bilobata, G. O. Sars (Sts. 2 and 8).

Pleurogonium inerme, G. O. Sars (St. 8), 3 miles off Sunderland 40 fathoms, off Marsden 30 fathoms.

Pleurogonium rubicundum, G. O. Sars (St. 9), off Marsden 30 fathoms.

Pseudarachna hirsuta, G. O. Sars (Sts. 2 and 6).

Eurycope cornuta, G. O. Sars (St. 8).

„ *mutica*, G. O. Sars (Sts. 1 and 2).

Periambus typicus, Kröyer, 30 miles off Sunderland 40 fathoms.

Janira maculosa, Leach (St. 10).

AMPHIPODA (Alex. Meek, M.Sc.)

Stations ...	1	2	3	4	6	7	8	9
Family Hyperiidæ.								
Hyperoche tauriformis, Bate and Westwood	...	...	*	...	...	...	...	...
Euthemisto compressa, Goes ...	*	...	*	...	...	...	...	...
Family Lysianassidæ.								
Acidostoma obesum, Bate ...	...	*	...	*	*	...	...	...
Hippomedon denticulatus, Bate ...	...	...	...	*	*	*	...	...
„ *propinquus*, G. O. Sars	...	...	...	*	*	...	...	...
Tryphosa nana, Kröyer	...	...	...	...	...	...	*	...
Tryphosa nanoides, Lilljeborg ...	...	...	...	*	...	...	...	...
Tryphosites longipes, Bate ...	...	...	...	...	*	*	...	...
Family Pontoporeiidæ.								
Bathyporeia pelagica, Bate ...	...	...	...	*	*	...	...	...
Argissa hamatipes, Norman ...	...	*	...	*	*	...	...	...
Family Phoxocephalidæ.								
Harpinia neglecta, G. O. Sars ...	*	*	*	*	*	*	...	...

Stations ...	1	2	3	4	6	7	8	9
Family Ampeliscidæ.								
Ampelisca tenuicornis, Lilljeborg...	...	*	...	*	*	*	...	*
„ *assimilis*, Boeck ...	*	...	...	...	...	...	...	...
„ *macrocephala*, Lilljeborg	*	*	...	*	*	...	*	...
„ *spinipes*, Boeck ...	*	...	...	...	...	...	...	...
Byblis gaimardi, Kröyer	...	*	...	...	...	...	...	...
Haploops tubicola, Lilljeborg ...	*	...	...	...	...	...	...	...
Family Amphilochidæ.								
Amphilochus manudens, Bate ...	*	...	...	...	*	...	...	...
Amphilochoides odontonyx, Boeck	*	...	...	...	*	...	...	...
„ *pusillus*	...	...	...	...	...	...	...	*
Family Stenothoidæ.								
Metopa rubrovittata, G. O. Sars...	...	...	...	...	*	...	...	...
„ *palmata*, G. O. Sars ...	...	...	...	...	...	...	*	...
„ *nasuta*, Boeck	...	*	...	*	*	...	...	...
„ *pusilla* (?), G. O. Sars ...	...	...	...	...	...	...	...	*
Cressa dubia, Bate	*	...	...	*	...	...	...	...
Family Œdiceridæ.								
Perioculodes longimanus, Bate ...	...	*	...	*	...	...	*	...
Halimedon mülleri, Boeck ...	...	...	..	*	*	*	...	*
Family Paramphithoidæ.								
Paramphithoe bicuspis, Kröyer ...	*	*	...	*	*	...	...	...
Parapleustes latipes, M. Sars ...	...	...	...	...	*	...	...	...
Family Epimeridæ.								
Epimeria cornigera, Fabricius ...	*	...	...	...	...	...	...	...
Family Iphimedidæ.								
Iphimedia obesa, Rathke	...	*	...	...	...	...	...	*
Family Syrrhoidæ.								
Tiron acanthurus, Lilljeborg ...	...	...	...	...	...	...	*	...
Family Calliopiidæ.								
Apherusa borealis, Boeck ...	*	...	...	*	*	...	*	*
„ *jurinii*, M. Edwards ...	...	...	...	...	...	...	...	*

Family Gammaridæ. Stations ...	1	2	3	4	6	7	8	9
Melphidippella macera, Norman...	...	...	...	...	*	...	*	*
Melita obtusata, Montagu ...	...	*	...	...	...	...	...	...
„ *dentata*, Kröyer	*	...	...	...	...	...	...	...
Cheirocratus sundewalli, Rathke..	...	...	...	...	...	...	...	*
Family Photidæ.								
Aora gracilis, Bate	...	...	...	...	...	...	...	*
Autonoe Websteri, Bate	*	...	...	*	...	...	...	*
**Protomedeia fasciata*, Kröyer ...	*	...	...	*	*	*	...	...
Gammaropsis erythrophthalma, Lilljeborg...	...	*	...	...	...	...	...	*
„ *nana*, G. O. Sars ...	...	...	*	*	*	...	...	*
Megamphopus cornutus, Norman..	...	...	...	...	...	...	...	*
Photis reinhardi, Kröyer ...	...	*	...	*	*	*	*	*
Podoceropsis excavata, Bate ...	...	*	...	...	...	...	...	...
Family Podoceridæ.								
Erichthonius hunteri, Bate ...	...	...	...	...	...	...	...	*
Family Dulichiidæ.								
Dulichia porrecta, Bate	...	*	...	*	*	...	...	...
Family Caprellidæ.								
Phtisica marina, Slabber... ...	...	...	...	...	...	...	...	*
Periambus typicus, Kröyer ...	...	...	...	...	*	*	*	*

* Kindly named by Canon Norman.

Amphipoda from 82 miles east by north in 42–5 fathoms, 21st to 25th October, 1901 (Sheppard) :—

Metopa pollexiana, Bate.
Cressa dubia, Bate.
Paramphithoe bicuspis, Kröyer.
„ *monocuspis*, G. O. Sars.
„ *assimilis*, G. O. Sars.
Melita palmata, Montagu.
Gammaropsis erythrophthalma, Lilljeborg.
Photis reinhardi, Kröyer.
Ischyrocerus anguipes, Kröyer.
Podocerus pusillus, G. O. Sars.
„ *falcatus*, Montagu.
Erichthonius hunteri, Bate.
Caprella linearis, Linné.

COPEPODA.

Cletodes similis, T. Scott (St. 7).
Dactylopus tisboides, Claus (Sts. 6, 8).
„ *tenuiremis*, Claus (St. 6, 8).
Peltidium interruptum, Goodsir (Sts. 4, 6, 8).
Dermatomyzon nigripes, B. & R. (Sts. 1, 2).

(These Copepoda were taken in the dredge or bottom-net, and constitute, of course, a group quite distinct from those of the Plankton mentioned previously).

OSTRACODA.

Argillœcia affinis, sp. nov. (St. 2).
Cythere tuberculata, G. O. Sars (Sts. 4, 6, 8).
„ *quadridentata*, Baird (Sts. 4, 8).
„ *emaciata*, Brady (St. 8).
„ *concinna*, Jones (Sts. 2, 6).
„ *limicola*, Norman (Sts. 2, 6, 8).
„ *dunelmensis*, Norman (Sts. 2, 8).
„ *Jonesii*, Baird (Sts. 2, 4, 6, 8, 9).
Cytheridea papillosa, Bosquet (Sts. 6, 8),
Eucythere declivis, Norman (Sts. 2, 6).
Krithe bartonensis, Jones (St. 2).
Loxoconcha guttata, Norman (Sts. 2, 8, 9).
Xestoleberis aurantia, Baird (St. 2).
Cytheropteron latissimum, Norman (Sts. 2, 4, 6, 8).
Bythocythere turgida, G. O. Sars (Sts. 2, 6, 8).
„ *simplex*, Norman (Sts. 2, 4, 6, 8).
Sclerochilus contortus, Norman (Sts. 6, 8).
Xiphichilus tenuissimus, Norman (Sts. 6, 8).
Paradoxostoma variabile, Baird (St. 8).
Asterope mariæ, Baird (St. 4).
Philomedes brenda, Baird (St. 1).
Cytherella serrulata, Brady and Norman (St. 4).

Of the Ostracoda recorded in this list, the most abundant and most widely distributed was *Cythere Jonesii*: this fine species was found living and in beautiful condition in five out of the nine stations dredged during the cruise. Following

closely upon *C. Jonesii*, both as regards abundance and fine condition were *Cytheropteron latissimum* and *Bythocythere turgida*. *Bythocythere simplex*, though living and in good condition, occurred only sparingly. Of *Argillœcia affinis*, *Cythere emaciata*, *Xestoleberis aurantia*, *Paradoxostoma variabile*, *Asterope mariæ*, *Philomedes brenda*, and *Cytherella serrulata* only single specimens were found.

PYCNOGONIDA.

Nymphon brevirostre, Hodge.

One specimen from Station 10 and one from trawl material brought in by Mr. Sheppard. Dr. Hoek* thinks that this "very unsatisfactorily described species" is probably the same as Kröyer's *N. brevitarse* and *N. grossipes*, O. Fabr. Kröyer, however, gives no drawings of his species, and it is scarcely possible to decide the question from his verbal description. These specimens seem however to agree sufficiently well with the figures and descriptions of *N. brevitarse* given by Professor G. O. Sars. I am therefore disposed to agree with Hoek in considering the two names as referring to one and the same species, in which case Kröyer's name ought to be adopted on the ground of priority.

ANTHOZOA.

Sphenotrochus Wrightii, Gosse.

A single specimen of this interesting little coral was found in the dredging from Station 7. I know of no record of it except that given by Mr. Gosse in his "Actinologia Britannica," where he states that the four specimens on which the species is founded were "dredged by G. C. Hyndman, Esq., among shell-sand, from a turbot bank off the coast of Antrim in 1852." Our specimen, like the types, is very minute, not more than about one-sixth of an inch in height. I have submitted the specimen to Professor A. C. Haddon, who agrees with me in assigning it to this species.

* Hoek, Report on the Pycnogonida of the Challenger Expedition, p 21.
Kröyer, Nat. Tidskr., 1845, p. 115.

P.S.—Since this report was in type, a more complete examination of some of the dredged material has brought to light a few examples of Mollusca belonging to the very interesting group of Aplacophora. The only specimen which can at present be definitely named is *Chætoderma productum* (St. 2, 59 fathoms), for the determination of which I am indebted to Mr. Shipley. With the exception of *Neomenia carinata*, which belongs to the same group, and is noticed in another page of this volume, none of these animals have heretofore been found in our area.

G. S. B.

VI.—*Miscellanea.*

Neomenia carinata? Tullberg.—Two specimens of this interesting mollusc have been in my possession for many years unrecognised. They were dredged thirty miles off Sunderland in a depth of forty fathoms. I am indebted to Dr. Sidney S. Harmer, F.R.S., of Cambridge, for the identification, respecting which, however, it may be well to quote the following extract from his letter: "It is obvious from Wiren's paper that it is not easy to discriminate between the species without microscopical examination. If one may assume that this is one of the two hitherto recorded British species—*N. carinata* and *N. dalyelli*—though I am by no means sure that that is a safe assumption, then I take the specimen which is left in my hands to be *N. carinata*, simply because it appears to me to have a dorsal keel." Previous British records of *Neomenia carinata* had been made by the Rev. Canon Norman (see Annals and Magazine of Natural History, 1879); the exact locality seems to have been lost, though Dr. Norman entertains no doubt that it was in the Shetland seas that it was dredged. It has been recorded also by Sir John Murray from upper Loch Etive, 50–70 fathoms. Of my two specimens I have retained one, and it is now preserved in the Museum of the Durham College of Science; the other specimen I gave to Dr. Harmer for the Cambridge University Museum. *Neomenia* is of special interest as representing, along with *Chiton* and other allied genera, the most primitive type of molluscan organisation.

It may be interesting to add that two other species of Aplacophora, *Rhopalonema aglaiopheniæ*, Kow. & Mar., and *Myzomenia Banyulensis*, Pruvot, have been recorded from Plymouth by Mr. Walter Garstang. These were found coiled round the stems and branches of two Zoophytes, *Aglaiophenia myriophyllum* and *Lafoea dumosa*.—*G. S. Brady, Feb. 20th, 1902.*

Echinoderes.—It has happened to me to take specimens of this peculiar group of animals (Kinorhyncha) on at least

two occasions—once at Rockcliffe on the north shore of the Solway, and once at Runswick on the Yorkshire coast. Though neither of these places are actually in our district, they are near enough to make the captures specially interesting, observations of the group in British seas being apparently very scanty. The only British record known to me is that of Professor Marcus Hartog in Vol. II. of the Cambridge Natural History, where he figures a specimen taken at Worthing, and notes the "British Channel" as a habitat. The species figured by Hartog is, however, not identical with either of those taken by me. The Runswick specimens were got during a short afternoon's dredging just outside the bay in a depth of 4-6 fathoms on a bottom of rather muddy sand, the chief animal constituents of the gathering being Cumacea and Entomostraca. It was not, indeed, until a few months ago, on a renewed examination of the haul that I detected the Echinoderes, of which there were five or six examples. The species is, I believe, *E. pellucidus*, Reinhard. The Rockcliffe specimen, a single one, seems to belong to another species which I cannot at present name.

It would be well that zoologists should keep a good look out for these animals. I feel sure that I have seen them on other occasions and have passed them by. Their paucity of numbers and very minute size—about one-thirtieth of an inch—of course render this easy.—*G. S. Brady, Feb. 20th, 1902.*

Local Notes on Birds, 1901–02.—The later stragglers of a number of species of summer migrants were more numerous, or at any rate more conspicuous, in the autumn of 1901 than usual. Thus Whitethroats, Whinchats, and Redstarts were to be seen in this district up to the second week in September; and the occurrence of a Wheatear as late as October 4th is worth recording. This bird was seen several times that afternoon by Mr. Thomas Brady and myself along the coast between South Shields and Marsden.

Other noteworthy occurrences in the autumn were the

taking of a Hoopoe on September 11th at Newbiggin-by-the-Sea, reported by Mr. J. Alaric Richardson, and the appearance of Siskins on migration. I came across a flock of seven or eight Siskins in an old quarry near Kenton on September 27th, and another single bird near Ovingham three days later. Hawfinches were probably more numerous in the Tyne Valley this winter than ever before, and one was picked up dead at Woolsington, three miles north-west of Newcastle. On December 15th, during a snowstorm, I saw a Goldfinch by the west turnpike above Styford Hall, near Corbridge, and had the pleasure of watching it for some little time.

In the spring of 1902 a few of the migrants, though not the generality of them, arrived unusually early. Wood Wrens were singing in some numbers near Ravensworth Castle on April 21st, and a Corncrake was heard near Stocksfield on the 24th. These are both early dates for the appearance of the birds in question; but a much more remarkable instance is the arrival of the Spotted Flycatcher as early as the 27th of April, on which day I watched two of these birds for a considerable time by the river Blyth near Stannington.

E. Leonard Gill.

ADDRESS TO THE MEMBERS OF THE TYNESIDE NATURALISTS' FIELD CLUB.

READ BY THE PRESIDENT, THOMAS THOMPSON, ESQ., AT THE FIFTY-THIRD ANNIVERSARY MEETING ON THE 10TH MAY, 1901.

THE FIRST FIELD MEETING was held at Lanchester and Howns Gill on Monday, the 28th May, 1900, a very strong, cold, wind prevailing, which certainly did not add to the pleasure of the excursion. Ten members were present, some of whom left Newcastle by train at 12.25 and alighted at Lanchester. There they were met by the Rev. Arthur Watts, F.G.S., Rector of Witton Gilbert, and a former President of our Club, and by Mr. Balleny, of Little Greencroft Hall, and later were joined by Mr. Buckham, of Lanchester. They first visited the Parish Church, the benefice of which has gone through the stages of a Rectory, Collegiate Church, and Perpetual Curacy. The founder furnished a set of statutes and ordinances which were confirmed by Edward I. in A.D. 1293. Mr. Watts pointed out the fine monolith pillars in the northern arcade which first did duty in some public building in the Roman Camp, suggesting that this was probably in Gordian III's basilica, A.D. 240. He also drew attention to the magnificent altar in the Church porch, found in 1893 near a spring on Margery Flatt farm, and to the finely carved chamfered stone quite recently found in making an enlarged organ chamber. Eight out of the sixteen points of a sun-like figure are to be seen, each ending in a trefoil; this "Sun" formed the head of the stone, which has been split vertically.

The Roman Camp was next visited, where several specially worked stones were pointed out by Mr. Buckham. Then under the guidance of Mr. Balleny, the line of the ancient water course was followed from the reservoir off the south-west angle of the Camp to the source beyond David's Tower, in Howns Gill. This entailed a walk of three miles or more, across pasture and heath, bog and wood and tillage, during which the botanists were kept on the *qui vive*. Passing Hollin

House, over Hunter Hill, with its fine prospect and the beautiful demesne of woodlands, the trail of the Roman watercourse was picked up in never-broken ground and followed both ways for many hundred yards. In one direction it led to the high earth mound which was thrown across a small valley to dam back the waters till a sufficient head rose to the level of the watercourse. The only stonework noted was very rough, and consisted of a conduit bringing water from a spring further west of this reservoir. Close by this spot Mr. Balleny found a Roman Altar now at his house, but which unfortunately is too weathered to allow any detail to be made out.

Finally the Gill with its friendly shelter was reached as well by them as by the other members, including myself, who had proceeded by a walk of about two miles from Blackhill Station.

Geologically speaking it has the appearance of an old river valley in times prior to the glacial epoch. Possibly it is the old bed of the river Derwent which at some remote period flowed in this direction, being then a feeder of the Wear. The very great depth of the Gill, whose nearly vertical sides in several places showed outcrops of well marked beds facing each other, the massive character of some of these beds and their indurated condition, the widening flat expanses of bog and pasture here and there, all spoke eloquently of fluviatile denudation through a very prolonged period, and were eagerly watched by the party. Just before the viaduct the magnitude of the river work was greatly emphasized when the curious and intricate caves were entered and somewhat fearfully explored. From these caves, which are quarries horizontally driven into the solid rock, most of the stone for the Consett public buildings was obtained. The whole evidence was so cumulative that all felt no doubt that their day's walk had ended in a stroll up an ancient river course. But the tall slender viaduct with its returning arches for foundation reminded us of the engineering difficulties encountered by the builders of the Consett and Crook Railway, through the

enormous depth of the alluvium that even at this point, the very crest of the cut through ridge, fills up the rock valley to the present level, and brings before the mind's eye the mighty power of running water more vividly than any of the other scenes had done. The viaduct begun in 1857, which carries a single line of rails, is formed of twelve semi-circular arches of fifty feet span. The centre piers are stayed by the insertion of inverted arches at their bases. The highest part of the viaduct is at the centre arches where the rails are (155) one hundred and fifty-five feet above the ground.

The banks of the Dene are studded with trees mostly of young growth, and it was noticed that the oak was opening in advance of the ash, bearing out the old adage—

"If the oak is out before the ash
'Twill be a summer of wet and splash."

Very few birds were seen or heard throughout the day, but amongst those noted were the Redstart, Wood Wren, Chiffchaff, Willow Wren. Tree Pipit, Bullfinch, Carrion Crow, and a few others. It is to be regretted that the Bullfinch has become much rarer in the Derwent valley of late years, being so easily caught to be kept in captivity. Amongst the wild flowers noticed were Wood Anemone, Lesser Celandine, Marsh Marigold, Dog Violet, Wood Sorrel, Bird Cherry, Sweet Cicely, Sweet Woodruff, Bilberry, Wood Forget-me-not, Wood Rush, Globe Flower, and Butterwort.

The Second Field Meeting was held at Wooler and the neighbourhood on Tuesday, Wednesday, and Thursday, the 26th, 27th, and 28th June.

We left Newcastle at noon on Tuesday, arriving at Wooler about three o'clock, and the remainder of the day was devoted to short walks in the immediate locality. Akeld was visited, taking Humbleton Hill on the way, and Yeavering Bell was reached by some members.

On Wednesday morning, though rather showery, we drove up the valley of the Wooler water to Langleyford, for the ascent of Cheviot. Unfortunately soon after reaching the

summit a mist settled down which completely hid the fine views expected, and visits to the Henhole and Biggle—two gorges in the hillside noted for rare plants—had to be reluctantly abandoned. In the valley the luxuriant growth of the hawthorn in tree form was noticed, and on the way up the mountain the botanists gathered the Crowberry, Whortleberry, Cloudberry, Bilberry, Cow-wheat, and Cotton-grass, but they came across nothing very uncommon. Nor were the ornithologists more fortunate, for nothing more uncommon than the following list of birds was seen throughout the meeting: blackbird, cuckoo, blackheaded gull, blue titmouse, sandpiper, yellow bunting, partridge, swift, sand martin, curlew, green plover, golden plover, red grouse, whitethroat, meadow pipit, ring ouzel, teal, ring dove, missel thrush, great titmouse, dipper, pied wagtail, wheat-ear, whinchat, and wood wren.

Near the summit of Cheviot was found a nest of the Red Grouse containing seven eggs; this would no doubt be the second hatching of the pair. Two caterpillars of the Drinker moth were found; this larva is covered thickly with hairs, which help afterwards to form its cocoon.

Rejoining the carriages at Langleyford we started on the return journey, and on the way stopped by invitation at Middleton Hall, where we were kindly received and entertained to tea by Mr. and Mrs. Philipson. Finally we arrived back in Wooler to spend another night there.

On Thursday, after an early breakfast, a pleasant drive of about four miles took us to Whitsun Bank Fell, a favourite breeding place of the Black-headed Gull. The sight discovered when we reached it was a most beautiful and wonderful one, where I could have spent the whole day in real enjoyment. It would be impossible to estimate how many thousands of birds were there, most of them on the wing. The eggs and young birds were in many different stages of development, and unfortunately there were many dead ones among them, owing to recent wet weather. I remarked that though I had visited the breeding-places of this bird at Hallington, the Northumberland Lakes, Walney Island, and

Ravenglass, I had never seen anything to equal the numbers here. It was with much regret that the limit of time was announced, and the gulls were left again in their chosen solitude. The ground is the property of the Earl of Tankerville.

Returning to Wooler to change conveyances at the Black Bull Hotel, a start was made for Etal, distant about 8 miles north-west. The road lay through the charming scenery of the valley of the Till. The village is said to be one of the prettiest in the North of England, and boasts, besides, the possession of one of the Border Castles. Built in the middle of the fourteenth century, there is still standing a well-preserved gateway, and the outer walls of the Keep, now crumbling and ivy-covered. It was destroyed for all practical purposes by James IV. of Scotland about the date of the battle of Flodden. The position is a splendid one, on a steep bank overhanging the river.

We next drove to Ford, a model village attached to the Northumberland castle and estate of the Marquis of Waterford. The school-house is deserving of a visit to see the frescoes that completely cover the walls. They were painted and given to the School by Louisa, late Marchioness of Waterford, and represent, almost life-size, various Scripture scenes in which children appear. In the visitors' book kept by the Schoolmaster appear among others the signatures of Sir Edwin Landseer, Earl Grey, Dr. Lightfoot, Earl Cowper, Duke of Buccleugh, Dean Stanley, Earl Granville, Lord Armstrong, Prof. Huxley, Sir Charles Trevelyan, Duke of Teck, W. E. Gladstone, Earl of Gainsborough, Earl of Shrewsbury, Richard Doyle, and Charles Beresford.

The headquarters at Wooler were reached once more in time to catch the 6.20 train back to Newcastle, where we duly arrived after a pleasant excursion.

The Third Field Meeting was held at Wetheral and Corby on Wednesday, July 18th. We left Newcastle by the 8.15 train, and arrived at Wetheral a few minutes after 10

o'clock on an exceptionally fine morning. We crossed over the railway bridge, whose five arches are 100 feet in height and 80 feet span, and stayed a few minutes to enjoy the beautiful views up and down the river Eden with its thickly-wooded banks. Passing through the village of Great Corby, one of our young friends took a photograph of the unique blacksmith's shop. We then entered the lodge gate of the Corby Castle grounds. The Castle stands on the edge of a cliff overlooking the river, and is a plain square mansion of modern appearance built of red freestone. A parapet round the house is surmounted with lions, the family crest of the Howards. The estate was bought from the Salkelds by the famous Belted Will of Naworth, 1563–1639, from one of whose younger sons the present owners are descended.

The beautiful scenery of the woodland glades afforded much pleasure to everyone as we traversed the cool and shady walks. There were a great variety of trees noticed, many of them of ancient and almost gigantic growth; among them were beech, oak, ash, elm, lime, chesnut, horse-chesnut, sycamore, service tree, hornbeam, birch, black and white poplar, and of conifers, Scotch fir, silver fir, spruce fir, yew, and larch. It was impossible to walk underneath the lime trees in particular without stopping to admire their glorious foliage and wealth of scented bloom. Through them we now and then obtained a peep of the river, as it flowed over its rocky bed, impetuous, muddy, and swollen by recent heavy rains. In passing an old oak, much decayed, lying near the river-side, one at once wondered if its life had reached the term of years sung by the poet Dryden—

> "Three centuries he grows; and three he stays
> Supreme in state; and in three more decays."

We had a peep at the fish-locks, which, however, contained no spoil. As we walked on through the grounds we found placed at various points of vantage a statue of St. Constantine, another in the attire of a Grecian warrior (of this a photograph was taken), a dilapidated temple containing stone figures of

two females, and a pretty building with steps, pillars, and a sculptured front.

Soon after we left the private grounds and crossed the river by the ferry boat. A ramble of about a mile, on the opposite bank of the river, brought us to to the caves of St. Constantine, sometimes called Wetheral Safeguards. These are forty feet above the river, hewn out of the solid rock, and consist of three cavities, each seven yards in length, three in width, and three in height, each having a window looking on to the river. They are mentioned as early as the time of Henry II. Near them is an inscription in the rock supposed by some to be Roman. From this spot I saw, four years ago, the most unusual sight of a night-jar or goat sucker flying by daylight. It was hawking up and down the stream.

Returning, we passed what little remains of the Priory, which was founded in 1088 for monks of the Benedictine order; it was pulled down to supply building material for the prebendal residences in Carlisle.

After having some refreshment at the boat-house, we returned through Corby and had a pleasant stroll down the stream. Crossing at Warwick Bridge we came back up the other side to Wetheral, and as time still allowed we paid a visit to the parish church. Here the principal attraction is the marble monument by Nollekins, to the memory of and representing the young wife and infant daughter of Henry Howard, who died in 1789.

There was nothing uncommon noted among the wild flowers, and very few birds were seen or heard. It was here noticed, however, that the hay-harvest was general and good; the turnips, too, growing on the light and loamy soils of the red sandstone, were of particularly strong and healthy growth.

The Fourth Field Meeting was held on Thursday, 16th August, at Embleton and Dunstanborough. We left Newcastle by train at 10.25, and reached Christon Bank soon after noon. The day was an ideal one for our purpose—bright sunshine tempered by a cool breeze from the sea. We

took the path near the station which leads to Embleton through the fields; here on every hand signs of approaching autumn were visible, not only in the ripening of grain, but also in the abundance of such flowers as Devil's bit (*Scabiosa succisa*) and Knapweed or Hardhead (*Centaurea nigra*) true harbingers of the season.

We visited the church, where several interesting relics were noticed, especially the grave covers with incised crosses, which have been built into the walls of the porch. The lowest stage of the tower and part of the nave walls exhibit the oldest masonry in the church, probably dating from very early in the 12th century; the nave arches were built about the year 1200, and bear decoration characteristic of the period, and the aisles were considerably enlarged and the upper part of the tower built between 1330 and 1340. The chancel is modern. Incorporated with the vicarage is one of the old Border peel towers, and vicarage and church are well sheltered by some fine elm trees.

In passing through the village we noticed several nests of the house martin, where the old birds were busily engaged feeding their young, and a few chimney swallows flying about were evidently bent on the same errand. After a short walk we reached the shore, and followed it to the ruins of Dunstanborough Castle. This building stands on a bold basaltic rock, nowhere less than 30 feet above sea level, and on the north side rising to heights of 100 and 120 feet. It was by far the largest castle in Northumberland, as the walls enclosed an area of ten acres. It was built by Thomas Plantagenet, Earl of Lancaster, Leicester, and Derby, about 1314–1320. It seems to have had remarkably little to do with Border warfare, but was conspicuous as a Lancastrian stronghold during the Wars of the Roses, and, tradition says, was visited by Queen Margaret of Anjou. The only buildings now left are the gateway with its two massive flanking towers, three smaller towers on the wall, and parts of the wall itself have been recently repaired so as to prevent further dilapidation. The internal buildings, which were of somewhat later date,

have disappeared. At the base of the Castle rock, at its S.E. angle, is a curious wave worn chasm known as Rumble-Churn; and not far distant is the "Grey Mare," or "Saddle Rock," interesting to geologists as an out-crop of limestone in which denudation has exposed the undulating fold of the beds.

Late in the afternoon we returned to Embleton for tea at the Hare and Hounds (which, by the way, is built on the site of the old Friends' Meeting House). Then we went on to Christon Bank Station to take train homeward, satisfied that we had taken part in one of the most agreeable excursions of the season, and only sorry so few members were there to enjoy it.

Nothing extraordinary in the way of either bird or plant life was observed, but the ramble was by no means destitute of interest. Plants noted included the Wall Pellitory, Acrimony, Hound's Tongue, Small Scabious, and Cornflower. Perhaps the most interesting thing from a botanical point of view was to find within the castle enclosure all the five British species of plantain growing practically side by side. Of birds we saw several brown linnets, a few wheatears and whinchats, and heard the notes of a redshank.

The Fifth Field Meeting was held on Thursday, 13th September, in Richmond and the neighbourhood. We left Newcastle by train at 10.5 a.m., arriving at Richmond ten minutes before noon. There we were joined by Mr. Raine, an eminent authority on the geology of the district, who kindly acted as guide throughout the day. We at once engaged a brake, and started on the drive to Reeth, a little town situated near the confluence of the Swale and Arcle, some ten miles up the valley. Places of interest passed on the road are Marrick Priory, founded in 1165, Ellerton Abbey, founded in the reign of Henry II., and Willance's Leap, a cliff down which a runaway horse is said to have come in two leaps of 100 feet each in 1606, the horse being killed, but the rider having received no worse hurt than a broken leg. Close by the junction of the rivers stands the ancient church of Grinton, which we

entered as we returned, to see the fine old stained glass in the windows.

At Reeth our attention was divided between dinner and a short ramble to examine some of the geological features of the district, notably the traces of a glacial lake and the quarries of chert, a siliceous limestone, which is sent to Staffordshire for the manufacture of stoneware. In fact the main interest of the day was geological; for the picturesque beauty of the dale is owing to the high limestone crags which close it in. The "Main," "Red," and "Black" beds of the limestone formation are visible, capped on the highest ridges with millstone grit. There is still much lead ore in the limestone, and in several places signs of old lead mining are to be seen. But the part of the dale we saw is now purely agricultural, varied only by tracts of woodland. I understand, however, that mines are working above Reeth.

During the drive the following trees were noted: oak, ash, beech, chestnut, sycamore, rowan, wayfaring tree or water elder, bird cherry, hazel, birch, elder, yew, larch, Scotch fir, alder, and blackthorn. The ash, and on the river bank the alders, were particularly luxuriant, and the blackthorn and bird-cherry had plentiful crops of berries. The last named seem to be special favourites with birds, and the leaves of the shrub are also unusually subject to insect ravages.

After the return drive to Richmond, the short time left to us was spent in hurriedly glancing at the ruins of the Norman Castle, St. Mary's Church, the Museum of the Mechanics' Institute, and a fine Norman doorway which is all that remains of St. Martin's Priory. The Castle was founded in 1070 by Earl Alan, and the Keep built afterwards in the reign of Henry I. St. Mary's also probably dates from the same reign, and standing above the river commands a view rarely equalled for quiet beauty.

Much of the success of the meeting was due to the kind attention and able guidance of Mr. Raine.

THE SIXTH AND LAST FIELD MEETING was held at Morpeth and Mitford on Friday, October 5th. The first contingent of the party left Newcastle by the 9.30 a.m. train, and arrived at Morpeth a few minutes before 10 o'clock. We visited the ruins of the Castle, a 14th century building on a hill to the south of the town, of which only some parts of the outer wall and the gateway are left standing. Then a short walk brought us to the old parish church on Kirk Hill; this, though a plain building, contains several objects of interest to the antiquary, not least among them being the ancient glass of the east window illustrating the Tree of Jesse, and the squints. There is also that subject of endless controversy, a low side window. The path from the churchyard gate to the porch is bordered on each side with a row of yew trees, and we noticed, too, a willow tree of unusually large size outside.

After meeting the rest of the party at the station, we commenced the real object of the excursion, namely, a ramble up the Wansbeck Valley to Mitford. The woods with which it is clothed were looking gorgeous in their autumn dress, and the supply of berries and other seeds was plentiful. Flowers of the wall pellitory were gathered, and the November-blooming ivy was well forward. A harvest mouse (the smallest of British quadrupeds) was captured. Bird life was not much in evidence.

Just below Mitford the Font Burn joins the Wansbeck from the North.

On reaching Mitford the church first claimed our attention. It was built partly in the 12th and partly in the 13th centuries showing traces in its changing architecture of the differen dates; it formerly belonged to Lannercost Priory. It has lately been restored, and, when we saw it, was decorated for the harvest festival. The Vicar kindly pointed out the various interesting objects.

Passing through the Manor House grounds we next visited the ruins of Mitford Castle, which occupy a splendid position on a hill, a little way to the south of the church. There is now little but the outside walls left, the castle having been

destroyed by the Scots in 1323. We then retraced our steps so far, but kept the south side of the Wansbeck till we reached Morpeth, where we had tea at the Queen's Head Hotel, after which we left by the train at 6.11 p.m.

It now remains for me to record what has been so important a feature of our year's proceedings, namely, the series of Joint Evening Meetings held in the Museum in conjunction with the members of the Natural History Society. The following are the dates of the meetings and the topics treated by members and others :—

On October 30th, 1900, Prof. Alex. Meek lectured "On the Mysids of Cullercoats," accompanying his description with a limelight display of living specimens.

On November 27th, Mr. R. W. Ellison read "Notes on Birds of the Solway," which he illustrated with specimens of eggs.

On January 29th, 1901, no meeting was held owing to the death of the Queen.

On February 26th, a highly interesting lecture was delivered on "The Hawk Moths," by J. E. Robson, Esq., F.E.S.

On March 26th, Mr. D. Rosie read "Entomological Notes for 1900."

On April 30th, Prof. Potter read Mr. J. W. Fawcett's notes on "A Naturalist's Ramble in the upper reaches of the Browney Valley," a paper which obtained the Hancock Essay first prize. Mr. Rosie also read his essay "On a walk from Hexham to Swallowship through Dipton Woods," to which was awarded second prize.

So valuable and varied a programme speaks for itself in suggesting the importance of maintaining and supporting these Joint Evening Meetings. I regret exceedingly that ill health prevented me from being present at any of them.

Having thus reviewed the Meetings of the past year, I have now to thank you for the honour conferred by my election to the office of President. On such an occasion as the present

we are forcibly reminded of the great loss which we have so recently sustained by the death of Mr. Richard Howse, M.A., who, as one of our original members, served on our first Committee, and who in 1876 was elected as my colleague in the secretaryship of the Club. This is neither the time nor the place for detailing his eminent services. These, I trust, may fittingly be enlarged upon hereafter by those better able to do justice to his character and attainments as a naturalist.

By the death of Dr. Dennis Embleton our Club has been deprived in the past year of one of its most conspicuous figures. Our Transactions have been from time to time enriched by contributions indicating the many-sided character of his activities, and including his important papers on the phenomena of the structure and varieties of eggs, and on the place-names of Teesdale. But at this time we chiefly recall his memory in association with the group of distinguished and accomplished men to whom this Club owes its origin.

And we have to deplore the yet further loss sustained by the death of our Honorary Treasurer, Mr. W. E. Branford. At our meeting in July last he formed one of the party in our visit to Corby, when, as at all times, his genial presence was cordially welcomed. A lover of country life in general, and especially interested in ornithology, he possessed a knowledge of the characters and habits of birds which rendered his companionship in our field work interesting in the highest degree. Of the services to the Club in his official capacity it is only necessary to say that they were the outcome of the zeal and interest manifested by him from first to last in promoting its welfare. He became a member in 1865.

It is but to record a general feeling to say that we are all of us the poorer to-day by this threefold loss to our ranks.

Following the example of my predecessors I would now add a few notes, which I shall endeavour to lay before you in the form of a more or less connected narrative of the various circumstances, and as these include some hitherto unrecorded

observations, they may perhaps be found worthy of preservation.

From my early days I have always taken great pleasure in studying the habits of birds and fishes. The former especially attracted me, as I had greater opportunities for the observation of their habits. Adjoining my father's house was a large corn stack-yard, frequented in winter by flocks of small birds. My school as a boy was at a farmhouse, on the way to which I had to walk through a field by the side of a clear runner of water. At one part of its course this formed a pond on the sides of which clumps of whins attracted to their shelter many brown linnets. Captives of these were caught on willow-wands smeared with bird lime. The pond itself was also much frequented by varieties of small birds in summer, and by the Common and Jack Snipe in winter. Added to this the neighbouring hedgerows on the way attracted fieldfares and redwings in considerable numbers, so that the daily walk to school afforded most enjoyable opportunities for the study of bird life.

I made a collection of eggs which gave me great pleasure, and on leaving school this included thirty-seven varieties. This was easily done at that time, few of the woods in the district being then preserved as they now are. It was not, however, until May, 1857, that I began in real earnest as a collector. After a long illness I had been sent to Croft to recruit my health, and one forenoon, whilst sitting with a friend under the verandah at the Spa, I saw a spotted fly-catcher passing in and out and flying along the whole length of the structure, and showing great anxiety in its manner. I remarked to my companion that the bird was apparently seeking a spot where it might build its nest. It then flew away, but soon returned bringing another bird with it. Both together examined a particular spot most carefully, and I noted it as that which had been selected for the nest. Next morning there was no appearance of a nest at all, but on the following morning a small piece of moss had been deposited, and so a nest was begun in which four eggs were ultimately

laid. Those are now in my collection, and are all of a pale blue colour. I may state that I have never seen similar eggs in any other public or private collection elsewhere.

On 29th May, 1856, I saw in Chopwell Wood nearly a dozen cuckoos all on the wing together. They settled on a large tree, and until that day I had no idea that cuckoos had such a variety of strange notes; I had never heard anything like it. I took my first nest of the grasshopper warbler the same day with six eggs, now in my collection.

On 12th and 17th June, 1868, I saw numbers of glow worms also in Chopwell, and heard what I thought to be the nightingale. It was so dark, however, that I could not see it. The song was very brief, but loud.

I took a nest containing four eggs of the reed warbler in the railway cutting between Blaydon and Derwenthaugh, in a bed of willows nearly forty years ago. This I have most carefully preserved in a case, and it is still as fresh, or nearly so, as on that day. This bird I think had not been known to breed on the north-east side of England before.

June 28th, 1869, saw two specimens, male and female, of the Painted Lady Butterfly on Barlow Fell.

Of the tawny or wood owl I have known several nests which I have generally found in holes of trees or cliffs, but they breed in a variety of other places. In one instance I took a nest of three eggs in a rabbit hole near Sherburn Tower; on another occasion, 26th March, 1876, I saw one sitting on her eggs in an old dog kennel; these were ultimately hatched all right, and I had the pleasure one evening of seeing all the young ones sitting on a tree secure from harm's way. This occurred in Chopwell Wood near the Woodman's cottage, within a few yards of his door. My friend, Mr. Isaac Clark, of Blaydon, informed me that he knew of one in the same locality which took possession of a domestic fowl's nest in an outhouse. In the latter instance unfortunately the bird was not allowed to hatch her eggs. In Chopwell Wood, Mr. Robinson, the gamekeeper, also disturbed an owl sitting on five eggs on the ground under a bramble bush; these I took

and they are now in my collection. They may possibly be the eggs of the short-eared owl, as I never knew of a long-eared owl breeding in any other than in an old nest, and, generally speaking, in a fir tree.

The barn owl is now I fear and deeply regret seldom seen in this locality; I have one nest taken out of Derwent Bridge at Gibside, in 1834, by my late friend Mr. Thomas Robson, of Swalwell. Another nest in my possession was taken in Ryton Church Steeple in 1858. I may mention that at that time a large colony of jackdaws bred in the Church tower, and had done so for many years previously. The materials accumulated by these birds had at that time filled the base of the tower with an almost solid mass of nests about four feet in height. It was a remarkable, and to me a beautiful sight to see all those on the top filled with their complement of eggs.

Now the nesting of our little friend the long-tailed tit-mouse presents some characteristics worthy of remark. On three separate occasions on the banks of the River Derwent I have disturbed and have seen three old birds fly out of a single nest one after the other. How it is possible that they can have been there with the eggs is one of those things most difficult to understand. On another occasion I found one of their nests in Gibside which had two entrances, one at the back and one at the front. I kept this nest in a box with a glass lid for several years, but ultimately the moths obtained an entrance and destroyed it. Another nest of this bird found by me had been constructed almost entirely from a copy of the Newcastle Weekly Express newspaper.

The Northumberland Lakes and their neighbourhood were my favourite hunting ground for several years. On one of my visits I stayed at the "Twice Brewed" Inn for a week. As I lay in bed there I could hear outside the notes of the curlew, of the golden and green plovers, of the grouse, the cuckoo, the lark, and of many others. It was here, in 1859, I took my first eggs of the golden plover, curlew, snipe, teal, coot, ring and water ouzel, and lesser black-back gull. At this date Mr. John Hancock told me he had never

before heard of the last named bird breeding here. On a subsequent occasion my brother and I were returning from and near to Crag Lough when we saw a flock of about thirty goldfinches; this was the only flock we had then or since seen of these birds. I have frequently found the nests of the curlew here and elsewhere containing eggs, but only once, namely in 1862, did the old bird sit till I was within a few feet of her. On that occasion I saw that the eggs were near hatching, and so left them.

In the same year—1862—I spent a most enjoyable day at the Bass Rock. The summit was then covered with grass, and on it there were many gannets sitting on their nests of seaweed, each containing one egg. When I walked about amongst them they remained sitting quietly on their nests, never attempting to fly. On the eastern side of the rock yet greater numbers were to be seen sitting on their nests. There were also many guillemots, puffins, and other sea birds on the wing; not, however, to be compared with the number seen at Ailsa Craig. After returning to the little hostelry on the mainland for dinner, a party of three arrived with a gun. They had come expressly from some considerable distance to obtain a specimen of an immature gannet, that is, of the bird in its spotted black and white plumage, and they wished me to return to the island with them. I did so with pleasure, and found there was only one particular bird in the whole colony which answered to the object of their quest. It was sufficiently conspicuous in its flight, but the repeated attempts to secure it proved in vain, and the ammunition was reduced to half an ounce, which was reserved for one last shot. This, however, proved fatal, and the bird fell dead close to the boat, and we at once returned to the inn. I have had a variety of guns through my hands from my youth up, but I must say that the lock of this one was the most primitive specimen I ever saw or heard of. On my return to the mainland no bedroom was obtainable, so I lay on the sofa. Sleep, however, was impossible, owing to the sound of a wheezy old clock which stood in the room, and to the noise made by a company of

rats running behind the skirting boards. As soon as it was daylight, therefore, I dressed and left the house for a walk into the country. I had walked some miles along the turnpike road when I saw a common thrush carrying a snail shell to a stone on the road, where it tried to break it. In this it was unsuccessful; so taking it in its bill again it flew over the wall into an adjoining field, where it broke the shell and devoured the contents. On examining the spot I found a stone about six inches in height with a round top, and lying around it as many broken shells as would have filled a tumbler. This was evidently its feeding place.

Very few persons may have heard the song of a common house sparrow. I have, however, been myself fortunate in doing so. It happened as I was walking through the then principal street in Whitley, I was quite suddenly surprised by hearing what I thought to be the song of a sedge warbler, for I am familiar with the song, if you may call it such, of sedge warblers, having heard them repeatedly at all hours of the day and night between Scotswood and Blaydon in the turnpike cut amongst the reeds and small bushes, as well as in many other places. I stopped at once and looked for a cage or open window from which the sound might have come, as the idea of seeing one of these birds in captivity seemed to me very extraordinary. Standing perfectly quiet and looking over the rails, however, I saw an old cock sparrow sitting with drooping wings and in full song. Another incident relating to the sparrow afforded me matter of surprise. It occurred on a summer's day in going through a large wood near Winlaton (a wood in which I took an egg of the carrion crow for the first time when a school boy). On this occasion I encountered so large a number that it seemed as if all the sparrows in the neighbourhood had arrived and brought their young ones with them to feed on the caterpillars with which the trees were then infested. No doubt sparrows do much harm both to farmers and gardeners; still I think they should not be considered an unmitigated evil. They are also great enemies to the white butterflies, and may frequently be seen chasing them on the wing.

On one occasion, near Buxton, I saw a titlark pursue a white butterfly for about one hundred yards, but it failed to capture it.

A circumstance of a different character may here be noted. Many years ago, whilst staying at Whitley, my brother and I were searching rock pools near the cave at Cullercoats, when my brother called me to look at what he had discovered. I ran to the spot, and on kneeling down I found half-a-dozen specimens of the Hippocampus were distinctly visible, as they were quietly floating in a perpendicular position. I had never seen any living Hippocampi before, nor did I then know this strange creature, but to my brother they were perfectly familiar. The pool in which we found them was about five feet in length, eighteen inches across, and about twelve inches in depth. The bodies of these little Hippocampi seemed almost transparent. The saltwater aquarium I had never had an opportunity of forming, but at an early period we had formed a fresh water one, the observation of which afforded a great pleasure. In this the common Stickleback bred on one occasion, and the young ones grew till they were about an inch in length and then disappeared. Their nest was about two inches in length, and most carefully watched and protected by the male fish.

Perhaps one of the sights which impressed me most forcibly was when I saw a large snake being fed in a travelling caravan in Newcastle. The reptile was placed on a rough sort of platform stretched out to its full length of about five feet; a rabbit, after being stunned, was then set about 18 inches from its head. In this position they remained motionless for a few minutes, then, like a flash of lightning, not a particle of the rabbit could be seen, it being instantly wrapped in the folds of the snake. The snake, after keeping the rabbit in its mouth some minutes, gradually unfolded and swallowed it, and repeated the same process with two others in quick succession.

I have occasionally come across common vipers when in the woods near Winlaton, most frequently as they lay basking

in the sun, but on two occasions I have met with them in the water. The first of these was when I was a school boy, and with others was fishing for trout in Blaydon Burn. I supposed I had secured a good-sized eel under a stone, and so pressed it as hard as possible. Judge of my surprise when landing it to find I had taken a viper, but I got no harm and carried it home in triumph. The second I saw swimming near Lannercost Abbey, where I also caught a specimen of the Miller's Thumb, or River Bullhead, now in the Hancock Museum.

Another most unexpected, and to me most wonderful sight, never to be forgotten, occurred in May, 1889, when in crossing the Bay of Biscay I witnessed about twenty whales of various sizes all in sight at once on either side of our ship. The largest seemed to be at least forty feet in length, and a few appeared to be at no greater distance than fifty yards from the vessel.

A pair of honey buzzards, it may be mentioned, bred in Gibside in 1899. In the same year I got the seven eggs of a water hen, which had used an old magpie's nest on a fir tree forty feet from the ground.

In recording these casual observations I have already exceeded the limits of my original intention, and have greatly trespassed, I fear, upon your indulgence. Yet I have by no means exhausted the store of incidents from which these random notes have been drawn. I might refer to dotterels seen and shot on Newcastle Town Moor in 1876, three of which are now in my possession, and to many other items, which tempt me to extend the account of my recollections. But I must for the present refrain, and I conclude my remarks with the observation that although much has been done in past years, yet more remains before us. For our field is the vast and practically inexhaustible domain of Nature itself.

CASH ACCOUNT OF THE TYNESIDE NATURALISTS' FIELD CLUB

FOR THE YEAR ENDING 31ST DECEMBER, 1900.

1900.		£	s.	d.
Jan. 1.	To Balance in Bank	43	13	4
,,	Cheque from Mrs. Branford :—			
	J. Wright, Transactions... £0 8 0			
	Do. do. 0 10 0			
	Do. do. 0 3 6			
	Do. do. 1 0 0			
	2 1 6			
	R. Howse..... 2 12 0			
		4	13	6
April 7. ,,	Cheque, Barclay & Co.	4	14	1
Dec. 31. ,,	,, Hindmarsh & Heppell for Subscriptions, less commission and expenses (paid March, 1901)	28	10	0
		81	10	11
1901.				
Jan.	,, Balance down	£45	8	8

1900.		£	s.	d.
Feb. 5.	By "Newcastle Journal," 1899 Account...	11	0	10
,, 24.	,, Geo. West & Son, Printing.....	7	8	0
Dec. 31.	,, Hon. Secretaries' Expenses.....	6	3	6
,,	,, "Newcastle Journal," 1900 Account (paid March, 1901)	11	9	11
,,	,, Balance down	45	8	8
		£81	10	11

C. E. ROBSON,
HON. TREASURER,

April 26th, 1901.—Examined and found correct,
A. TRANAH, HON. AUDITOR.

NATURAL HISTORY SOCIETY

OF

NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE.

REPORT OF THE COMMITTEE FOR THE YEAR 1899–1900.

The Committee have now the pleasure of congratulating the members of the Society on the satisfactory completion of the alteration of the roof-lights and the general repairs to the walls of the Museum, and other improvements recommended by their architect, Mr. F. W. Rich, in the latter part of 1898. Many of the details have been mentioned in former Annual Reports, but it seems advisable at the completion of the alterations to give a short summary of what has been so satisfactorily done.

The most important and difficult part of the work was the alteration of the whole of the roof-lights, including the glass and leadwork and the slating over the three main roofs, which have been entirely renewed; the wood snow-boards have also been repaired. At the same time the height of the glass roofs has been considerably lowered and the inner wood-work strengthened and altered. It is satisfactory to know that this work has stood a severe test during the last winter, and that the soundness of its design and execution has been proved, as not a drop of water has penetrated into the inner rooms, nor a slate been disturbed on the outer roof.

On the east side and front of the building the joints on the parapets of the roof and the open joints of the stonework have been raked out, refilled, and pointed, and the defective brick-

work repaired. The leadwork generally and the lead flashings have been pointed with oil mastic and re-adjusted.

The whole of the rainwater spouts, which are enclosed in the east wall, have been cut off from direct connection with the sewers, and intercepting shafts have been built to each down spout, the shafts being lined with white glazed bricks and fitted with stone kerbs and iron gratings. The internal drainage of the building has likewise been properly disconnected from the main sewers, and other very necessary sanitary improvements effected.

The work now finished has brought the Museum building into a more satisfactory state, averting as it does the constant danger arising from the weakness and bad construction of the former roof, and the continual dampness and flooding of the floors from the dropping of water through the inner roof after every heavy shower of rain or fall of snow. This work includes the bulk of that recommended by the architect as absolutely necessary to be done, and the whole has been carried out thoroughly under his direct and careful supervision at a cost of about £1,628.

Since the above was completed the plastering of the ceiling of the East Corridor has been entirely removed and replaced, and the ceilings of the staircases and the inner rooms carefully repaired. The whole of the walls and ceilings of the large rooms, corridors, work-rooms, and passages have been coloured. It was necessary in order to accomplish this that the Museum should be entirely closed, and this was done for a period of about three weeks from August 26th to September 18th, 1899.

The Committee gratefully acknowledge that all these important and costly alterations could not have been carried out without the kind assistance and liberal donations of the influential friends and members of the Society, and the successful result of their appeal is specially due to the kind exertions of Mr. Watson-Armstrong. From the time of the first mention of a Building-Repair Fund, Mr. Watson-

Armstrong showed his interest in this important matter, and headed the subscription list with a donation of £500 from Lord Armstrong and £250 from himself. Several other influential friends promised large subscriptions, so that a sum was readily secured which enabled the Committee to request the architect to proceed at once with the alterations recommended in his report. A list of the subscribers to this fund will be appended to this Report. The following balance sheet shows the manner in which these subscriptions have been expended. It is proposed to apply the small balance left to the cost of repairing the roadway leading to the Museum, which work is now in progress.

BUILDING REPAIRS FUND ACCOUNT.

FROM MARCH, 1898, TO JUNE, 1900.

1900. RECEIPTS.	£	s.	d.
June 30.			
To Subscriptions received from March, 1898, to June, 1900, as per Subscription List appended ...	1942	3	0
To Interest	2	9	0
	£1944	12	0

1898. PAYMENTS.	£	s.	d.
August.			
By Advertisements— per J. Wright ...	12	9	2
1899.			
March.			
By J. Bell—Circulars..	4	6	0
,, N. Maughan from December, 1898, to April, 1900 ...	1378	9	10
,, Hewitson... ...	203	19	2
,, G. G. Laidler ...	125	14	5
,, Ferguson	61	17	2
,, Holmes	3	1	0
,, R. Herron ...	24	5	3
,, F. W. Rich ...	116	7	0
,, Balance in Bank ...	14	3	0
	£1944	12	0

The amount of entrance fees shows a falling off in the number of visitors to the Museum compared with former years. This diminution has no doubt arisen from the circumstance that the Museum was entirely closed for about three weeks in the autumn months of last year, and also from the unusually severe weather that prevailed so long in the early months of the present year. The approximate number of visitors annually is from 15,000 to 20,000.

Your Committee would call the attention of the members to the fact that of late years applications for the use of the Museum buildings for receptions and conversaziones of a public or quasi-public character have been more numerous, and while recognising the fact that Newcastle as a large provincial town has no building so well adapted as the Museum for meetings of this character, the Committee feel that in the future they will have to abandon their present practice of making no charge for the use of the rooms. Regulations dealing with the conditions under which the use of the Museum is granted have been drawn up.

Museum Guides.—During the last year two Guides to the Museum have been printed. One is the third edition of the General Guide, which is chiefly enquired for and purchased by visitors, and of which about three to four hundred are sold annually. The other is an Index Guide to the Hancock Collection of British Birds, and forms an authentic register of that collection. It is purchased chiefly by persons specially interested in ornithology and from distant parts of the country.

Hancock Prize Award for 1899.—Only three essays were sent in for the Hancock Prize competition, which had been fully advertised as usual in the local papers. The Rev. Canon Tristram and the Rev. Canon Norman again undertook the duty of examining the essays. The Examiners reported that the best essay was sent by Mr. F. W. Ritson, viz., "A Ramble round Allendale District." They also strongly recommended Miss Minton-Senhouse's essay on "Some Fruits of the more common Wild Flowers." The Committee determined that the First Prize should be awarded to Mr. Ritson, and that a prize of the value of £2 should be given to Miss Minton-Senhouse, with the information that if her essay had been written more in accordance with the conditions advertised by the Committee it would have received a more favourable commendation by the Examiners. Mr. Ritson again made a selection of books on scientific

subjects. Miss Minton-Senhouse requested to be allowed to make a selection of scientific instruments which she required and a work on botany for the amount of her prize.

During the year the Society has been, on the application of the Secretaries, recognised as one of the Corresponding Societies of the British Association, and Prof. M. C. Potter was appointed as delegate of the Society to the Bradford Meeting.

Evening Meetings.—The usual number of Joint Evening Meetings with the Tyneside Naturalists' Field Club were held during the winter months, when a few members of this Society and of the Field Club were joined by most of the working Associates.

The First Meeting was held on Tuesday evening, October 31st, 1899, when about 18 members were present. The Rev. Arthur Watts, F.G.S., gave a short inaugural address suggesting that the field work done by the members during the summer months should be revised and matured in notes that could be read at the winter evening meetings. A further address was given on the recent changes in our river systems since the close of the Glacial Period. The usual discussion followed, and the meeting was concluded with the thanks of those present to the lecturer and chairman.

The Second Meeting took place on Tuesday evening, Nov. 28th, when about 20 members and friends assembled to hear two papers by Prof. G. S. Brady, one "On Ilyopsilus and other minute Crustacea taken at Alnmouth in 1899," and the other on "An Afternoon's Dredging off Cullercoats" in the same year. Mr. Turnbull exhibited an example of two nests of the Dipper placed close together and interwoven, on the branch of a tree overhanging water. Mr. R. W. Ellison exhibited a series of photos of the nests and eggs of Terns and other birds.

At the Third Meeting, January 30th, 1900, owing to the very stormy weather, only a very small number of members were present. The business of the meeting was chiefly the

reading of the Hancock Prize Essays for 1899. The First Prize Essay, entitled "A Ramble round Allendale District," was read by the author, Mr. F. W. Ritson. Miss Minton-Senhouse's essay on "Some Fruits of the more common Field Flowers," was read by Mr. Alaric Richardson. Lengthened discussion followed the reading of each paper.

The Fourth Meeting was held on the 27th February, when, it being another stormy night, only about a dozen members ventured to the meeting. An interesting and instructive lecture, illustrated with limelight views of the luxuriant and remarkable tropical vegetation of Ceylon, was given by Prof. M. C. Potter, hon. secretary. Afterwards some short accounts were given of the habits of some of the North American Woodpeckers, which were illustrated with part of a tree stem perforated by these birds, and also by a large collection of the skins of the Californian species lately presented to the Natural History Society by Mr. Alfred W. Johnston, formerly of Gateshead.

The Fifth Meeting, 27th March, was attended by about a dozen members, the weather as usual was again very unfavourable. Mr. J. E. Robson, F.E.S., came purposely from Hartlepool to give an address on the British Butterflies, a subject so well known to him. The members present listened with great pleasure to the exceedingly instructive and detailed account of each species of Butterfly indigenous to or introduced at an early or later period into the British Islands, with remarks on their abundance or rarity, and the food-plants of the different species.

The last Evening Meeting, 24th April, was attended by about ten members with some friends. The President of the Tyneside Naturalists' Field Club occupied the chair, and read a paper written by the Rev. Woodruffe-Peacock "On the Cuckoo; a Study." A long discussion followed the reading of the paper. Afterwards a large series of Cuckoo's eggs found in the nests of numerous species of small birds was examined by those present. Mr. Raine's collection of Geometer Moths was also exhibited and examined.

This meeting concluded the series of Evening Meetings for the winter months, and it must be mentioned as very unfortunate that the weather on nearly every occasion was most unfavourable, and no doubt tended to much reduce the attendance at these meetings.

Obituary.—The Committee have to deplore the loss by death of several of their older members. By the death of Mr. Alexander Shannon Stevenson we lose a former member of Committee and Vice-President. Though following no special pursuit in any branch of Natural History, he ever took a cordial interest in the objects aimed at by the Society, and in the promotion of its general welfare. For many years he was a frequent attender at the Committee meetings, and even after his removal to the South of England did not cease to be a member of the Society or lose an opportunity of visiting the Museum.

The usual number of transactions and books have been received as in former years in exchange or as presents from other Societies.

The most important and interesting donation is perhaps the skeleton of a Hippopotamus from Lake Nyassa, Central Africa, and several horns of some of the Antelopes which are now becoming rare in those districts where they formerly abounded. These and a few other curios have been thoughtfully brought home and presented by the Rev. R. Stewart Wright from the Shiré district of Central Africa. Mr. Gascoigne Lumley, Gateshead, presented the lower jaw of a young African Elephant and several remarkable fish-shaped ornaments worn on the head by natives at religious festivals in Nigeria. Mr. Alfred Johnston, formerly of Gateshead, presented a collection of 58 skins of birds from California. A very fine example of Bewick's Swan, killed near Haydon Bridge, was presented by George E. Crawhall, Esq., with several other birds from the same locality. An interesting collection of eggs from the Falkland Islands and Tierra del Fuego was presented by Dr. Allen H. Hobbs. These, with

many other smaller donations, will be enumerated in the list appended to this Report.

The following have been elected Members and Associates during the financial year ending 30th June, 1900 :—

MEMBERS.

George A. Atkinson..... 21, Windsor Terrace, Newcastle.
Rev. Thos. E. Crawhall.. Newton Hall Rectory, Stocksfield.
Rev. A. J. Harrison..... Magdalene Lodge, Newcastle.
James Cooke..... Clayley House, Granville Road, Newcastle.
Prof. T. H. Middleton... Durham College of Science.
Bryan Mawson Dodds... Home House, Low Fell, Gateshead.
G. P. Bulman, Esq. ..... Beverley House, Cullercoats.

ASSOCIATES.

William Gilhespy ..... Cambridge Street, Newcastle.
Alfred Woodcock..... 55, Mowbray Street, Heaton.
T. H. Mandell ..... Haydon Bridge.
J. F. Farbridge..... Hexham.

APPENDIX TO REPORT.

LIST OF SUBSCRIPTIONS TO THE BUILDING REPAIRS FUND.

	£	s.	d.
The Right Hon. Lord Armstrong, C.B.	500	0	0
Mr. W. A. Watson-Armstrong	250	0	0
Sir Andrew Noble, K.C.B.	250	0	0
Mr. W. D. Cruddas, M.P.	100	0	0
,, C. W. Mitchell	100	0	0
,, Ralph E. Lambton	100	0	0
,, R. Y. Green	25	0	0
,, H. N. Middleton	25	0	0
,, J. W. Pease	25	0	0
,, T. G. Gibson	25	0	0
,, Thomas Spencer	25	0	0
The Right Hon. Earl Percy	25	0	0
Mr. Geo. E. Henderson.	25	0	0
,, Drewett O. Drewett	25	0	0
,, Clement Stephenson.	21	0	0
,, R. R. Dees	21	0	0
,, Geo. E. Crawhall	20	0	0
,, W. F. Henderson	20	0	0
,, N. H. Martin	20	0	0
Col. H. F. Swan	20	0	0
Mr. John A. Woods	20	0	0
Sir Lindsay Wood, Bart.	20	0	0
Mr. Augt. E. Burdon	20	0	0
Dr. C. J. Gibb	10	10	0
Mrs. Edward Joicey	10	10	0
Mr. Thomas Bell	10	10	0
,, James Hall	10	0	0
,, John Pattinson	10	0	0
,, Jas. H. Straker	10	0	0
,, Thomas Thompson	10	0	0
,, J. W. Swan	10	0	0
,, Wm. Milburn	10	0	0
Mr. Wm. Cochrane	5	5	0
Dr. G. H. Philipson	5	5	0
Mr. L. W. Adamson	5	5	0
,, E. J. J. Browell	5	0	0
,, Robt. C. Clephan	5	0	0
,, A. H. Dickinson	5	0	0
,, Mark Fenwick	5	0	0
Rev. Principal Gurney	5	0	0
Mr. Robert G. Hoare	5	0	0
Prof. M. C. Potter, M.A.	5	0	0
Mr. W. M. Pybus	5	0	0
,, Chas. O. Trechmann	5	0	0
,, John D. Walker	5	0	0
,, J. E. McPherson	5	0	0
Miss Harvey	5	0	0
Mr. W. E. Beck	5	0	0
,, G. G. Laidler	5	0	0
,, J. L. Gracie	5	0	0
,, J. H. Richardson	5	0	0
Mr. and Mrs. Pumphrey	5	0	0
Mr. W. L. Anderson	5	0	0
,, ,, (2nd don.)	2	0	0
Prof. Somerville	3	3	0
,, G. R. Murray, M.D.	2	2	0
Lieut.-Col. Adamson, C.I.E.	2	2	0
Dr. Embleton	2	2	0
Mr. Jas. Richardson	2	2	0
,, M. Havelock	2	2	0
,, J. E. Rogerson	2	2	0
,, J. E. Woods	2	2	0
,, Edmund Lamb	2	2	0
,, P. O. Laidlaw	2	2	0
,, George Irving	2	2	0
	£1905	8	0

	£	s.	d.
Mr. John Daglish	2	2	0
Mrs. Dinning.....	2	2	0
Mr. J. D. Scott.....	2	2	0
The Misses Lambert.....	2	0	0
Mr. Alex. Meek, B.Sc....	2	0	0
,, Jas. S. Forster	2	0	0
Miss S. A. Richardson...	2	0	0
Mr. Thos. F. Deacon ...	1	1	0
,, ,, (2nd don.)	1	1	0
,, ,, (3rd don.)	1	1	0
Mr. W. J. H. Graham...	1	1	0
,, Richard Luckley.....	1	1	0
,, H. A. Paynter	1	1	0
The Misses Thompson...	1	1	0
Mr. Richard Welford ...	1	1	0
,, Harold Cookson.....	1	1	0
,, H. T. Archer.....	1	1	0
,, S. Graham	1	1	0
Mr. W. P. Grace	1	1	0
,, John Wilson	1	1	0
,, A. E. Macdonald ...	1	1	0
,, John Strachan, Q.C.	1	1	0
Mrs. John A. Cowen ...	1	1	0
Mr. Joseph Jackson	1	1	0
,, Wm. Glendinning ...	1	1	0
Miss Buchannan	1	1	0
Mr. James Sutherland ...	1	0	0
Mrs. Bradford Atkinson	1	0	0
Mr. Frank Sutherland ...	0	10	0
	36	15	0
	1905	8	0
	£1942	3	0

THE HONORARY TREASURER IN ACCOUNT

DR. CURRENT ACCOUNT FROM JUNE 30TH,

1899.	RECEIPTS.	£	s.	d.
June 30.	To Balance of last Account	132	2	5
1900.				
June 30.	,, Entrance Fees	144	7	2
	,, Members' Subscriptions	247	11	0
	,, Associates' ,,	3	15	0
	,, Interest on Stock :—			
	Newcastle Corporation, 3½ per cent. Irredeemable Stock (less Income Tax) £67 13 4			
	Wear Commissioners, 4½ per cent. Stock (less Income Tax) 21 15 0			
	*Tyne Commissioners' Consolidated Fund at 4½ per cent. (less Income Tax) 115 14 2			
		205	2	6
	,, Guides to Museum sold	3	9	4
		£736	7	5

* N.B.—This comprises *three* half-year's interest on this investment.

NOTE.—There is a sum of about £40 due to the Tyneside Naturalists' Field Club in respect of two parts of the Transactions.

Examined with the books and vouchers and found correct.

SAM. GRAHAM, AUDITOR

WITH THE NATURAL HISTORY SOCIETY.

1899, TO JUNE 30TH, 1900. CR.

1900.	PAYMENTS.	£	s.	d.	£	s.	d.
June 30.	By Salaries and Wages :—						
	Richard Howse	200	0	0			
	Joseph Wright	100	0	0			
	Wm. Voutt	68	18	0			
	Albert Spencer	60	19	0			
	Mrs. Atkinson	26	10	0			
					456	7	0
	,, Incidental Expenses :—						
	Coal	20	7	10			
	Coke	14	0	6			
	Gas	6	4	10			
	Water	5	3	6			
	Electric Lighting	3	8	11			
	Insurances	23	3	0			
	Income and Land Taxes	6	11	11			
	Advertisements	4	4	0			
					83	4	6
	,, Tradesmen's Accounts.						
	Dinning & Cooke	3	3	6			
	R. Herron	1	1	8			
	Crossling & Co.	0	12	0			
	J. Bell & Co.	23	14	6			
	Gurney & Jackson	1	2	6			
	Mawson & Swan	1	2	0			
	Jno. Jackson	6	15	0			
					37	11	2
	,, Sundries :—						
	Museums Association	1	1	0			
	Lichen Flora	0	13	0			
	Cheque Book	0	10	0			
	Sundries—per J. Wright	20	19	6			
					23	3	6
	,, Balance in Bank Book				136	1	3
					£736	7	5

THOS. THOMPSON,
HON. TREASURER.

THE HONORARY TREASURER IN ACCOUNT

CAPITAL ACCOUNT,

1900.	RECEIPTS.	£	s.	d.
July 1.	To Sum Invested in Newcastle Irredeemable Stock at 3½ per cent., as per last Capital Account...	2000	0	0
	,, Sum Invested in River Wear Commissioners Funded Debt at 4½ per cent., as per last Capital Account	500	0	0
	,, Sum Invested in Tyne Commissioners Consolidated Fund at 4 per cent., as per last Capital Account.....	2000	0	0
	,, Miss M. J. Hancock's Legacy of £100, less legacy duty placed on Deposit Receipt No. 29486, August 6th, 1897.....	90	0	0
		£4590	0	0

THOS. THOMPSON,
HON. TREASURER.

BUILDING REPAIRS

1899.	RECEIPTS	£	s.	d.
June 30.	To Balance of last Account.....	489	15	4
1900.				
June 30.	,, Subscriptions to the Building Repairs Fund, as per Bank Book.....£137 5 0			
	,, Bankers Interest on Account 0 16 6			
		138	1	6
		£627	16	10

THOS. THOMPSON,
HON. TREASURER.

FITTING

1899.		£	s.	d.
June 30.	To Balance at Bank	50	9	0
		£50	9	0

THOS. THOMPSON.
HON. TREASURER.

WITH THE NATURAL HISTORY SOCIETY.

30TH JUNE, 1900.

1900.	PAYMENTS.	£	s.	d.
June 30.	By Newcastle Corporation Irredeemable Stock at 3½ per cent., as per Certificate No. 260	2000	0	0
	,, River Wear Commissioners Funded Debt, No. 967, at 4½ per cent.	500	0	0
	,, Tyne Commissioners Consolidated Fund at 4 per cent., Mortgage No. 5948	2000	0	0
	,, Miss M. J. Hancock's Legacy, Deposit Receipt No. 29486	90	0	0
		£4590	0	0

The above Securities were produced and seen by me

SAM. GRAHAM, AUDITOR.

FUND ACCOUNT.

1899.	PAYMENTS.	£	s.	d.
July 6.	By J. Hewitson	120	0	0
1900.				
Feb. 16.	,, G. G. Laidler	125	14	5
,, ,,	,, J. Hewitson	83	19	2
,, 17.	,, W. Ferguson	61	17	2
,, ,,	,, J. H. Holmes	3	1	0
April 12.	,, R. Herron	24	5	3
,, 14.	,, N. Maughan	74	1	2
,, ,,	,, N. Maughan	4	8	8
June 19.	,, F. W. Rich	116	7	0
	,, Balance as per Bank Book	14	3	0
		£627	16	10

Examined with the books and vouchers and found correct.

SAM. GRAHAM, AUDITOR.

ACCOUNT.

		£	s.	d.
Sept. 14.	By Harris, for signboard	21	7	5
	,, Robson & Sons, curtains	6	12	4
Nov. 9.	,, Balance at Bank	22	9	3
		£50	9	0

Examined and found correct.

SAM. GRAHAM, AUDITOR.

OFFICERS OF THE NATURAL HISTORY SOCIETY,

1900–1901.

The following Members are proposed as Officers of the Society for 1900–1901 :—

PRESIDENT.

Lord Armstrong, C.B., F.R.S.

VICE-PRESIDENTS.

The Earl of Ravensworth.
Sir M. W. Ridley, Bart., M.P.
Sir Lowthian Bell, Bart., F.R.S.
Sir Andrew Noble, K.C.B., F.R.S.
Sir G. H. Philipson, M.D., D.C.L.
The Mayor of Newcastle.
R. R. Dees, Esq.
Dennis Embleton, Esq., M.D.
D. O. Drewett, Esq.
Joseph W. Swan, Esq.
H. N. Middleton, Esq.
W. A. Watson-Armstrong, Esq.
W. D. Cruddas, Esq.
E. J. J. Browell, Esq.
Prof. G. S. Brady, M.D., F.R.S.
I. G. Dickinson, Esq.
John A. Woods, Esq.
John Daglish, Esq.
G. E. Crawhall, Esq.
Rev. Principal Gurney, D.C.L.
Norman Cookson, Esq.
John F. Spence, Esq.
R. Y. Green, Esq.
Sir John Swinburne, Bart.

HON. TREASURER.

Thomas Thompson, Esq.

HON. SECRETARIES.

A. H. Dickinson, Esq. | Prof. M. C. Potter, M.A.

COMMITTEE.

H. T. Archer.
R. C. Clephan.
Samuel Graham.
Lieut.-Col. C. H. E. Adamson, C.I.E.
Prof. G. R. Murray.
N. H. Martin.
John Pattinson.
W. M. Pybus.
Alexander Meek.
J. D. Walker.
W. E. Beck.
J. D. Scott.

AUDITOR.

Samuel Graham.

HONORARY CURATORS,

1900–1901.

ZOOLOGY.

VERTEBRATA.

D. Embleton, M.D.
Samuel Graham.
Geo. E. Crawhall.
Thomas Thompson.
Alex. Meek.

INVERTEBRATA.

Rev. Canon Norman, F.R.S.
N. H. Martin.
Alex. Meek.
Lieut.-Col. C. H. E. Adamson, C.I.E.
Prof. Wm. Somerville.

BOTANY.

Rev. H. E. Fox.
Rev. Wm. Johnson.
J. Bidgood, B.Sc.
Prof. M. C. Potter.
C. E. Stuart.

GEOLOGY AND MINERALOGY.

E. J. J. Browell.
John Daglish.
E. J. Garwood.
Rev. Principal Gurney.
J. W. Kirkby.
Prof. G. A. Lebour.
John Pattinson.
Chas. O. Trechmann

CURATOR OF MUSEUM.

Richard Howse.

KEEPER OF MUSEUM BUILDING.

Joseph Wright.

LIST OF EXCHANGES AND DONATIONS TO THE MUSEUM AND LIBRARY

OF

THE NATURAL HISTORY SOCIETY,

FROM JULY 1ST, 1899, TO JUNE 30TH, 1900.

AMERICAN SOCIETIES.

UNITED STATES OF AMERICA.

Boston:—Society of Natural History.

Memoirs, Vol. V., Nos. 4, 5. 1899.

Proceedings, New Ser., Vol. 28, Nos. 13–16; Vol. 29, Nos. 1–8.

The Society.

Boston:—American Academy of Arts and Sciences.

Proceedings, Vol. XXXIV., Nos. 18–23; Vol. XXXV., Nos. 1–19.

Memoirs, Vol. V., No. 2, 3. *The Academy.*

Buffalo, N. Y.:—Society of Natural Sciences.

Bulletin, Vol. VI., Nos. 2, 3, 4.

Cambridge:—Museum of Comparative Zoology, Harvard College.

Bulletin, XXXIII., Coral Reefs of Fiji, 1899; Vol. XXIV. (Fishes, "Porcupine" Expedition).

Report of Exploration of W. Coast of America, Vol. XXIII., No. 2; XXV., The Ophiuridæ.

Bulletin (Geol. Ser., Vol. IV.), Vol. XXXIV.

Bulletin, Vol. 32, No. 10; Vol. 35, Nos. 1–8.

Annual Report of the Curator, 1898-99. *Prof. Alex. Agassiz.*

Chicago:—Academy of Sciences.

Bulletin, No. 11.

40th Annual Report. *The Academy.*

Milwaukee:—Natural History Society.

Bulletin, Vol. I. N.S., No. 1.

17th Annual Report, 1899. *The Society.*

Mineapolis, Minn.

Minnesota Botanical Series, III. Plant Life, 1899. *In Exchange.*

New York:—Academy of Science and Lyceum of Nat. History.

Memoirs, Vol. II, Part 1 (*Devonian Lamprey*).
Annals, Vol. XII., No. 1.
Charter, etc., and List of Members, 1899. *The Academy.*

Philadelphia:—Academy of Natural Sciences.

Proceedings, Parts 1, 2, Oct., Nov., Dec. *The Academy.*

Philadelphia:—American Philosophical Society.

Transactions, Vol. XX., Part 1.
Proceedings, Vol. 38, Nos. 159, 160. *The Society.*

St. Louis:—Academy of Science.

Transactions, Vol. VIII., Nos. 8–12.
,, Vol. IX., Nos. 1–7. *The Academy.*

Washington:—Smithsonian Institution: Bureau of Ethnology.

(Nil).

Washington:—Smithsonian Institution: Contributions to Knowledge.

Miscellaneous Collections:—
Index to literature of Thalium.
Index to the literature of Zirconium.
Title Page to Vol. 39. *The Institution.*

Washington:—Smithsonian Institution, U.S. National Museum.

Report of U.S. National Museum, 1897.
Proceedings, U.S.N.M., Vol. 21, 1899. *The Institution.*

Washington:—United States Geological Survey.

19th Annual Report, 1897–8, Parts 1, 2, 3, 4, 6, and 6 continued.
20th ,, Parts 1, 6, and 6 continued.
Monographs, XXIX., XXXI., XXXV.
Atlas and Maps to Monog. XXXI.
The Director of U.S. Geol. Survey.

Washington;—Department of Agriculture.

Bulletin, No. 10. Life Zones and Crop Zones. 1898.
Bulletin, No. 11. Geographical Distribution of Cereals. 1898.
Bulletin, Nos. 15, 17. North America Fauna.
Biological Bulletin, No. 12. *The U.S. Department of Agriculture.*

Wisconsin:—Natural History Society.

Bulletin, Vol. 1, N.S., No. 2. *The Society.*

SOUTH AMERICAN STATES.

Argentine States, Buenos Ayres:—Museo Nacional.
Anales, Tomo VI. (Ser. 2, t. iii.), 1899. Comunicaciones tomo I, Nos. 3, 4, 5, 6. *The Director, D. Carlos Berg.*

Uruguay, Monte Video:—Museo Nacional.
Anales, Tomo II., Fasc. 11, 12. 1899. *The Director.*

Valparaiso, Chili:—Revista Chilena de Historia Natural.
Anno 3, Nos. 3, 4, 5, 6, 7, 1899. *The Director.*

BRITISH SOCIETIES.

Berwick-upon-Tweed:—Berwickshire Naturalists' Club.
History, Vol. 16, Part 3. 1899. *The Club.*

Cambridge University:—Philosophical Society.
Proceedings, Vol. X., Parts 3, 4, 5. *The Society.*

Cardiff:—Naturalists' Society.
Report and Transactions, Vol. XXXI., 1898–99. *The Society.*

Dublin:—Royal Society.
(Nil).

Edinburgh:—Geological Society.
Transactions, Vol. VII., Part 4, 1899. *The Society.*

Edinburgh:—Botanical Society.
Transactions and Proceedings, Vol. XXI., Parts 1–3, 1897–99.

Edinburgh:—Royal Society.
Transactions. Meteorology of Ben Nevis, 1899. *The Society.*

Edinburgh:—Scottish Meteorological Society.
(Nil).

Glasgow:—Natural History Society.
Transactions, Vol. V., New Ser, Part 3, 1898–99. *The Society.*

Glasgow:—Geological Society.
(Nil).

Greenwich:—Royal Observatory.
Magnetical and Meteorological Observations, 1897. *The Astronomer Royal.*

Leeds:—Philosophical and Literary Society.
Annual Report for 1895–96. *The Society.*

Leeds :— Yorkshire Naturalists' Union.

(Nil).

Liverpool :—Literary and Philosophical Society.

Proceedings, Vol. LIII. *The Society.*

London :—British Museum, Cromwell Road, Kensington.

Hand-list of Birds, Vol. I, 1899.
Catalogue of African Plants, Vol. II., Part 1.
List of Genera and Species of Blastoidea.
The Trustees of British Museum.

London :—Museums Association.

Report of Proceedings of 9th Annual Meeting, Sheffield, 1898.
,, ,, 10th ,, Brighton, 1899.

London :—Nature.

From June 30th, 1899—June 30th, 1900. *The Publishers.*

London :—Quekett Microscopical Club.

Journal, Vol. 7, 2nd Ser., Nos. 45, 46. *The Club.*

London.

Rhopalocera Exotica, Parts 49, 50, 51, 52. *Purchased.*

London :—Zoological Society.

Proceedings, Parts 2, 3, 4, 1899,
,, Part 1, 1900.
Transactions, Vol. 15, Parts 2, 3, 4,
List of Fellows. *The Society.*

Manchester :—Literary and Philosophical Society.

Memoirs and Proceedings, 4th Ser., Vol. 43, Nos. 4, 5 ; Vol. 44, Nos. 1, 2, 3. *The Society.*

Newcastle-on-Tyne :—Institute of Mining and Mechanical Engineers.

Transactions, Vol. 48, Parts 2. 3, 4, 5, 6.
,, Vol. 49, ,, 1, 2, 3. 1897.
Annual Report, 1899. *The Institute.*

Newcastle-on-Tyne :—Geographical Society.

Journal, Vol. IV., No. 4. *The Society.*

Northampton :—Northamptonshire Natural History Society and Field Club.

Journal, 1899, Nos. 77, 78, 79, 80. *The Society.*

Norwich :—Norfolk and Norwich Naturalists' Society.
Transactions, Vol. VI., Part 5, 1899. *The Society.*

Plymouth :—Plymouth Institute.
Report and Transactions, Vol. 13, Part 1, 1898–99. *The Institute.*

Shildon, Co. Durham.
Herbarium of Lichen-Flora of North of England by Rev. W. Johnson, Fasciculus IX., Nos. 321–360. *Purchased.*

York :— Yorkshire Philosophical Society.
Annual Report for 1899. *The Society.*

COLONIAL SOCIETIES.

AUSTRALIA.

Brisbane, Queensland.
International Catalogue of Scientific Literature (Queensland volume). *The Agent-General.*

Adelaide, South Australia ;—Australasian Association for the Advancement of Science.
Report of Meeting, Sydney. *The Association.*

Sydney, N.S.W. :—Royal Society.
Journal and Proceedings, Vol. XXXII., 1899. *The Society.*

Sydney, N.S.W. :—Australian Museum.
Catalogue (17) Tunicata.
Records, Vol. III., No. 6.
Report for 1898. *The Trustees.*

CANADA.

Halifax, Nova Scotia :—The N.S. Institute of Natural Science.
Proceedings and Transactions, Vol. X, Part 1. *The Society.*

Montreal :—Natural History Society.
Canadian Record of Science, Vol. VII., No. 8, 1898; Vol. VIII., No. 2.

Ottawa :—Geological Survey.
Annual Report, 1897, Vol. X., with 4 maps, Nos. 560, 589, 599, 606.
Contributions to Canadian Palæontology, Vol. IV., Part 1, 1899.
The Director.

SOUTH AFRICA.

Cape Town, South Africa :—South African Museum.
Annals, Vol. I., Part 1, 2, 3, Dec., 1899.
,, Vol. II., Part 1. *The Trustees.*

EUROPEAN SOCIETIES.

BELGIUM.

Brussels :—Societé Royale Malacologique.
Annales, Tome XXXII., 1897 ; XXXIII., 1898.
Tome XXXI., fasc. 2, 1896.
Bulletins des Séances, 1899, pp. 33–96 ; 97–128. *The Society.*

FRANCE.

Marseilles :—La Faculté des Sciences de Marseille.
Annales I.–V. and IX., complete, 1899. *The Society.*

Paris :—Museum d'Histoire Naturelle.
Bulletin Nos. 7-8, 1898.
,, Nos. 1–5, 1899. *The Director.*

AUSTRIA.

Trencsèn :—Naturwissenschaftlichen Vereines des Trencsiner Comitates.
Jahresheft, 1898-99. *The Society.*

Vienna :—K. K. Zool-Botan. Gesellschaft in Wien.
Verhandlungen, Jahrgang 1896, Band XLIX., 1899. *The Society.*

DENMARK.

Copenhagen :—Videnskabelige fra Naturhistoriske Forening i Kjobenhavn.
Videnskabelige, Aaret 1899. *The Society.*

GERMANY.

Dresden :—Der Isis.
Abhandlungen, July–Dec., 1898.
,, Jan.–Dec., 1899. *The Society.*

NORWAY.

Bergen :—Bergens Museums.

Aarbog 1899, Hefte 1, 2.

Sars' Crustacea of Norway, Vol. 2, Parts 13, 14, Appendix 1899.

,, ,, Vol. 3, Parts 1–8.

Aarsberetning for 1899. *The Director of the Museum.*

Christiania :— Videnskabs-selskabet.

Forhandlingar, Nos. 1, 2, 4, 1899.

Oversight. *The Society.*

RUSSIA.

Helsingfors :—Societas pro Fauna et Flora Fennica.

Acta, Vols. 15, 17. 1898-99. *The Society.*

SWEDEN.

Stockholm :—Kongliga Svenska Vetenskaps-Akademiens.

Bihang, Vol. 24, 1898–99

Handlingar, Band 31.

Ofversigt, Vol. 56, 1899. *The Institute.*

Upsala :—University of Upsala Geological Institute.

Bulletin, Vol IV., Part 1, No. 7, 1898.

Bidrag (Carl von Linné), VIII. *The Institute.*

MISCELLANEOUS BOOKS.

Raptorial Birds of the Norwich Museum, Part 1, 1861.

Catalogue of the Birds of Prey, J. H. Gurney, 1864.

Memoir of the late J. H. Gurney by T. Southwell.

The Official Guide to the Norwich Castle Museum, 1896.

Presented by J. Hy. Gurney, Junr., Keswick Hall, Norwich.

Instituto Geologico de Mexico. Boletin Nos. 12, 13, 1899.

The Institute.

MAMMALS AND BIRDS.

Lower Jaws of a young African Elephant from South Nigeria.

Mr. Gascoigne Lumley, Gateshead.

A young Waterhen in the down, Woolsington, near Newcastle-on-Tyne.

Stuffed and presented by John Jackson.

Two Waterhens, ♂ and ♀ ; female, Dinnington, 9th April, 1898 ; male, Woolsington, 18th March, 1899. *Purchased of John Jackson.*

A Wren's Nest under a branch of fir tree from Woolsington, near Newcastle. *Presented by John Jackson.*

A specimen of the Spotted Flycatcher in first feathers from Woolsington.
Stuffed and presented by John Jackson.

A young Landrail in first feathers, shot near Otterburn, Redewater.
J. D. Walker, Esq.

A young Creeper, *Certhia familiaris*, from Duns, Berwickshire.
R. Mitford, Esq.

A collection of Bird's Eggs from the Falkland Islands and Tierra del Fuego. *Allen H. Hobbs, Esq., Ellison Place.*

Cormorant, ♀, beginning to moult, Holy Island.
Geo. Bolam, Esq., Berwick-on-Tweed.

A specimen of the Common Partridge, *Perdix cinerea*, with white horse-shoe mark on the breast; shot near Haydon Bridge, Sept., 1899.
George E. Crawhall, Esq.

A fine specimen of Bewick's Swan, *Cygnus Bewickii*, ♂ adult, shot by Thomas Walton, gamekeeper to Geo. E. Crawhall, Esq., on the Moor near Haydon Bridge, Dec, 7th, 1899.
Presented by Geo. E. Crawhall, Esq.

Red-throated Diver, shot in Cullercoats Bay, Dec., 1899.
Mr. W. H. Vincent, North Shields.

Pintail, ♂, shot near Fenham Flats.
Geo. Bolam, Esq., Berwick-upon-Tweed.

Nest of Wren with one of the parent birds strangled with a hair from the lining of its own nest, found near Rothbury by Mr. Garvie.
Presented by W. E. Adams, Esq., Weekly Chronicle.

Female Wigeon, immature, shot near Haydon Bridge, Dec. 5th, 1899.
Geo. E. Crawhall, Esq.

A collection of 58 Skins of Californian Birds (36 species).
Presented by Alfred W. Johnson, Esq., formerly of Gateshead.

A Green Paroquet, kept in confinement in Newcastle.
Mrs. H. Bertram, Clayton Park Square.

Six cases of Stuffed Birds (local specimens), bequeathed by the late J. C. Dennis, Esq., Benton. *Per Roger Buston, Esq., Tunbridge Wells.*

Skin of White Sheathbill, *Chionis alba*, Egg Harbour, South America, lat. 45° S., long. 65 W.
John Young, Esq., 64, Hereford Road, London, W.

REPTILES AND FISHES.

Skull of Crocodile from Borneo.
W. E. Roberts, Esq., Sundakan, Borneo, per C. E. Robson, Esq., Newcastle.

Sloughed Skin of large Snake from Burmah.
Lieut.-Col. C. H. E. Adamson.

Four Fishes (*Plectognathi*), viz., two of species of *Diodon*, and one of *Tetrodon*, and one Coffer-fish from Jamaica, West Indies.

Capt. Gilbert Howse, per Richard Howse.

A fine specimen of Bergylt, *Sebastes Norvegicus*, caught 6th July, 1899.

Presented by Messrs. Phillips, Newcastle.

INVERTEBRATA.

A bag of Cockles (series of young and old) from Budle Bay.

Mr. W. King, Sea Houses, Northumberland.

A collection of Marine Shells from the Barrier Reef.

Captain N. R. Sayers, Leazes Terrace.

Lithodes Maia, female, from trawler, North Shields.

Sent by Mr. G. Madden.

Balanoglossus minutus from Naples, and *Amphioxus lanceolatus*.

The College of Science, per Prof. G. S. Brady and Alex Meek.

A large Tick (supposed to be brought in with flowers). *Miss Holmes.*

BOTANY.

A packet *(fasciculi)* of British Hieracea.

The Rev. Canon Norman, Berkhampsted, Herts.

A specimen of *Sphœria Robertsii*, a fungus growing out of a caterpillar, Rotorua District, New Zealand. *Arthur Mann, Sidney Grove.*

FOSSILS AND MINERALS.

Nitrate of Soda (*Caliche*) from Chili, South America.

Two specimens of Gold Quartz from Chili.

Per W. R. Plummer, Esq.

ETHNOLOGY.

Three small Arrow-heads from an Indian grave, Brazil.

Per W. R. Plummer, Esq.

Poisoned Arrows from the New Hebrides.

Surgeon D. McNabb, R.N., Newcastle-on-Tyne.

A collection of curiosities from Nigeria, consisting of a Juju Head from Cross River; model of Leopard from Cross River; Religious Head Ornaments worn at religious festivals, viz., fish figure supposed to represent a Manatee from Epoffia, Sombriero River; young alligator, unknown fish, saw-fish, shark; face mask, and war drum, from same locality.

Presented by Mr. Gascoigne Lumley, Claremont Place, Gateshead.

Two Drain Pipes manufactured by J. S. Forster.

Presented by J. S. Forster, Esq.

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NATURAL HISTORY TRANSACTIONS

OF

NORTHUMBERLAND, DURHAM,

AND

NEWCASTLE-UPON-TYNE.

VOL. XIV.—PART II.

PRICE THREE SHILLINGS.

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1903.

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SEP 15 1903

NATURAL HISTORY SOCIETY

OF

NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE.

REPORT OF THE COMMITTEE FOR THE YEAR 1900–1901.

THE year of the Society closes with a membership of 225, being a reduction of 13 on the previous year. During the past year 12 members have died and 5 resigned, while 4 new members whose names will be found below have been elected. Our losses through death have been unusually severe, including the President of the Society (Lord Armstrong), two Vice-Presidents (Dr. Embleton and Mr. J. F. Spence), one member of Committee (Mr. H. T. Archer), and the Curator to the Society (Mr. Richard Howse, M.A.); and also several of the older members of the Society.

Lord Armstrong had been a member of the Society since 1846. He was a member of the Committee in the following year, a Vice-President in 1861, and has been the President continuously since 1893. He has always been a warm friend and munificent contributor to the Society, and it is in a very large measure due to his generosity that the building and fittings of the Museum are in their present state of completeness. He was the means of adding the Hutton collection of minerals and the library of the late Mr. Joshua Alder, and also made several other very valuable contributions to the collections and library of the Society.

Dr. Embleton had been a member of the Society since 1842; he early became a member of the Committee, and was elected a Vice-President in 1870; he was a well known contributor to the Transactions of the Society, and at his death he left to the Society a legacy of £25.

In the death of the late Curator, Mr. Richard Howse, your Committee feel that almost the last link with the earlier members of the Society has been severed. Mr. Howse had a life-long acquaintance with the earlier founders of the Society, and his name first appears among the list of Honorary Curators in 1861. In 1862 he seems to have generally superintended the re-arrangement of the collections, and in 1866 for the first time he appeared as the "General Curator" of the Museum. In 1882, on the completion of the new building, he was appointed the permanent Curator, and thenceforth devoted the whole of his time and attention to the work of the Society. He was one of the original members of the Tyneside Naturalists' Field Club, and was the Editor of the Natural History Transactions of the Society. He contributed largely to the Transactions, and his position as a naturalist was such that in his own special departments of mineralogy and geology he was a recognised authority.

The Committee felt the difficulty of filling Mr. Howse's post as Curator, having regard to his general acquaintance with nearly every branch of natural history; after much consideration in selecting from amongst many candidates, they have appointed Mr. E. Leonard Gill, B. Sc., late Assistant Curator in the Owens College Museum, Manchester, to be the Curator of the Museum, and have every confidence that his appointment will fulfil their expectations. As will be seen from the annexed epitome of Mr. Gill's first report to the Committee on the present state of the collections, there is much work to be done in connection with the preservation of the present collections before he can turn his attention to several other matters that are generally needed, and the Committee sincerely trust that the members will not allow the work of the Society to be crippled for lack of funds.

From the Treasurer's account the financial year of the Society has varied little from that of its preceding year, and there is a balance of £155 3s. 9d. in hand. Your Committee would however impress upon the Society that their present income is only just sufficient to pay the ordinary maintenance

and upkeep of the Museum, and is quite inadequate for the extension of the work of the Society, and for the purchase of additional specimens, &c., so highly desirable to fill up gaps in their collections. The Society also possesses a large and valuable library of which a very considerable portion remains unbound, and your Committee feel it to be of the utmost importance to undertake this work at an early date.

The Hancock Prize last year was awarded to Mr. T. W. Fawcett, and on the recommendation of the Examiners a second prize was given to Mr. D. Rosie.

During the past year the Society has become a Corresponding Society of the British Association.

Six Evening Meetings were arranged during the course of the winter, and interesting papers were contributed which were of special value as bearing upon the natural history of the district :—

October 30th.—On the Mysidæ collected at Cullercoats, by Mr. A. Meek, M. Sc.

November 27th.—Observations on the Birds of the Solway, by Mr. R. Ellison.

January 30th.—Meteorites, by the Rev. A. W. Watts.

February 27th.—Notes on the Sphyngidæ, by Mr. R. Robson.

March 27th.—Notes on the Larvæ collected during the summer, by Mr. D. Rosie.

April 24th.—Reading of the Hancock Essays.

The meeting arranged for January 30th was postponed on account of the death of Her Majesty Queen Victoria. It is satisfactory to note that there was throughout a good attendance, giving evidence of sustained interest in the meetings. The plan of throwing them open to non-members on payment of the ordinary admission fee proved a successful innovation.

As in previous years, the Society is indebted to a number of members and friends for the gift of specimens and books. A full list of donations, and also of the publications acquired by exchange, will be found appended to this report when it is

issued with the forthcoming volume of the Transactions; but special mention may here be made of the following donations: a set of objects from Central Africa, presented by the Rev. R. Stewart Wright, including horns of Eland, Hartbeeste, and Water Buck, and several native ornaments and utensils to add to the large series recently presented by the same gentleman; a remarkable piece of improvised ordnance from the Philippine Islands, presented by F. J. Charlton, R.N.; and a copy of Claus and Sedgwick's Zoology, presented by Mr. R. Y. Green.

The following gentlemen have been elected Members and Associates of the Society:—

MEMBERS.

Prof. T. H. Middleton, M. Sc.	Durham College of Science.
Capt. H. A. Pratt, R.A.	71, Osborne Road, Newcastle.
Henry Richardson.....	Literary and Philosophical Society, Newcastle.
Chas. S. Shortt	9, Grainger St. W., Newcastle.

ASSOCIATES.

Herbert Stevens.....	23, Mundella Terrace, Heaton.
E. Victor Nisbett	4, Summerhill Grove, Newcastle

APPENDIX.

EPITOME OF CURATOR'S REPORT OF JULY 10TH, 1901.

I have made as full an inspection of the Society's collections as time has allowed, and the following report on their present condition is the result of that inspection.

The collections contained in the Museum may be described as illustrating with considerable completeness the sciences of Zoology and Geology in general, and in addition as com-

prising in particular departments, such as those of the British birds and the Carboniferous and Permian fossils, collections the extent and historical importance of which place them among the most valuable of the Society's possessions, and have given them a wide fame among scientific specialists. At the present moment the contents of the Museum are in good order on the whole, though there is a large amount of work that requires taking up on the earliest possible opportunity. Amongst the most pressing portions of this work are the re-labelling of the mollusca, the remounting and re-labelling of the majority of the fossils, the cleaning and re-arrangement of the ethnological gallery, and the overhauling of the store-cupboards, store-rooms, and library. All this, involving as it will much detailed labour, will take a considerable time to accomplish; and not until it is completed can work of a more fundamental and progressive character be entered upon. I hope that this work, when it can finally be taken in hand, may include the enlargement and re-arrangement of the collections of Invertebrata, so that this section may be more adequately represented in the Museum; the formation and exhibition of an educative botanical series; and the development throughout the Museum of a system of guiding and explanatory labels. To carry out such a scheme of progressive work in a satisfactory manner, and at the same time to maintain the existing material in a good state of preservation, will probably entail a considerably greater annual outlay than has apparently hitherto been spent on the collections of the Society. It should also be mentioned that the extensive library, which is continually growing by the addition of the publications of many British and foreign scientific societies, will require increased accommodation and a considerable expenditure on binding before its valuable contents are available for reference.

E. Leonard Gill.

THE HONORARY TREASURER IN ACCOUNT

DR. CURRENT ACCOUNT FROM JULY 1ST,

1900.	RECEIPTS.	£	s.	d.
July 1.	To Balance at Lambton & Co., Bankers, Newcastle	136	1	3
	,, Members' Subscriptions 249 12 0			
	,, Associates' ,, ... 2 10 0			
	,, Admission Fees 168 9 5			
		420	11	5
	,, Interest on Stock :—			
	Newcastle Corporation, 3½ per cent. Stock (less Income Tax) £66 10 0			
	Wear Commissioners, 4½ per cent. Stock (less Income Tax)..... 21 9 5			
	Tyne Commissioners' Consolidated Fund at 4 per cent. (less Income Tax)..... 38 0 0			
		125	19	5
	,, Guides to Museum sold	6	2	11
	,, Donation from Young Men's Christian Association	15	15	0
	,, Dr. Embleton's Legacy	25	0	0
		£729	10	0

THOS. THOMPSON,

HON. TREASURER.

WITH THE NATURAL HISTORY SOCIETY.

1900, TO JUNE 30TH, 1901. CR.

1901.	PAYMENTS.	£	s.	d.	£	s.	d.
June 30.	By Salaries and Wages :—						
	Richard Howse	166	13	4			
	Joseph Wright	100	0	0			
	Wm. Voutt	67	12	0			
	Albert Spencer	59	16	0			
	Mrs. Atkinson	26	0	0			
					420	1	4
	,, Incidental Expenses :—						
	Coal	11	9	6			
	Coke	25	6	0			
	Gas	6	3	9			
	Water	3	14	0			
	Electric Lighting	3	1	11			
	Advertisements	5	4	4			
	Income and Land Taxes	9	7	6			
	Insurances	23	3	0			
					87	10	0
	,, Tradesmen's Accounts :—						
	Jno. Jackson	3	8	0			
	A. Reid & Co.	1	18	6			
	Crossling & Co.	0	12	0			
	Gurney & Jackson	1	12	6			
	J. Bell & Co.	20	9	6			
					28	0	6
	,, Sundries :—						
	Museums Association	1	1	0			
	Carriage of Skeleton Hippopotamus	10	0	0			
	Cheque Books	0	10	0			
	Disbursements—per Jos. Wright	17	17	1			
	Expenses *re* Curatorship	9	6	4			
					38	14	5
	,, Balance carried forward as per Bank Book				155	3	9
					£729	10	0

NOTE.—It should be noted that there is an outstanding amount of about £50 owing by the Society to the Tyneside Naturalists' Field Club on account of expenses of production of two parts of the Transactions; and further, that the Society will shortly be liable for a similar sum on account of two more parts which are now in the printer's hands.

Examined with the Books and Vouchers and found correct.

SAM. GRAHAM, AUDITOR.

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	,, Sum Invested in River Wear Commissioners Funded Debt at 4½ per cent., as per last Capital Account	500	0	0
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	,, Lambton & Co., Bankers, Newcastle	95	3	6
		£4595	3	6

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	,, River Wear Commission Funded Debt, No. 967, at 4½ per cent.	500	0	0
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	,, Lambton & Co., Bankers, Newcastle, Deposit Receipt, 36123	95	3	6
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— DICKSON (Benwell).—Monstrosity in the Dutch Rabbit.

REV. CANON DUNN.—A Grey Wagtail (*Motacilla melanope*) from Houghton-le-Spring.

THOS. GOLIGHTLY.—A small collection of Minerals from the Cleator Moor Hæmatite Mines.

SAML. GRAHAM.—A specimen of Mica Schist with enclosed flat pebbles from north of Loch Awe.

JOHN JACKSON.—A Marmoset, *Midas flavifrons*, stuffed by the donor.

JAMES MURRAY.—Nest of Tree Pipit (*Anthus trivialis*) with Cuckoo's egg.

CHAS. PARKINS.—A fine stuffed specimen of the Wild Cat from Scotland.

SOUTH AFRICAN MUSEUM (the Director).—A Peripatus, *Peripatopsis leonina*, Purcell, from Lion's Hill. Table Mountain, Cape Town, South Africa.

ALFRED TELFORD (per Edward Telford).—Two large "Sea Crayfish" (? *Palinurus sp.*) from Cuba.

H. B. WILSON.—A male Black-headed Gouldian Finch.

REV. R. STEWART WRIGHT.—A number of objects of natural history and ethnology collected by the donor in British Central Africa, viz.:—Skeleton of Hippopotamus from north end of Lake Nyasa; horns (one pair each) of the Eland, Hartebeeste, and Waterbuck, from the Shiré Highlands; six shells of *Tiphobia Horei* from Lake Tanganyika; Indiarubber as collected by natives, L. Tanganyika; Pumice from L. Nyasa; double wooden Food-plate, bead Necklace, and Comb ornamented with bead-work, from the Shiré Highlands; Beetles used as snuff-boxes by the Argoni, L. Nyasa; two Oars, one, flat-bladed, from L. Tanganyika, the other from L. Nyasa; piece of wood from the tree under which Livingstone's heart was buried, Illola.

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Boston :—American Academy of Arts and Sciences.

Proceedings, New Ser., Vol. XXXV., Nos. 20–27; Vol. XXXVI., Nos. 1–23.

Brooklyn :—Museum of Brooklyn Institute of Arts and Sciences.

Bulletin, Vol. 1, No. 1.

Cambridge:—Museum of Comparative Zoology, Harvard College.

Bulletin, Vol. 36, No. 1–6; Vol. 37, No. 1; Vol. 38.
Annual Report of the Curator, 1899-1900.

Chicago:—Academy of Sciences.

Bulletin, No. 3, Part 1.

Milwaukee :—Wisconsin Natural History Society.

Bulletin, Vol. 1, No. 3.

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Minnesota Botanical Studies, Secd. Ser., Part 4.

New York:—Academy of Sciences.

Annals, Vol. 12, Parts 2, 3; Vol. 13, Part 1.
Memoirs, Vol. 2, Part 2.

Philadelphia:—Academy of Natural Sciences.

Proceedings, Parts 1, 2, 3, 1900.

Philadelphia:—American Philosophical Society.

Proceedings, Vol. 39, Nos. 161–164.

Pittsburg:—Carnegie Museum.

Publications, Nos. 6, 7.

Salem :—American Association for Advancement of Science.
Proceedings, 48th Meeting, Columbus, Ohio, 1899.
,, 49th ,, New York, 1900.

St. Louis :—Academy of Science.
Transactions, Vol. 9, Nos. 6, 8, 9.
,, Vol. 10, Nos. 1–8.

Tufts College, Mass.
Tufts College Studies, No. 6.

Washington :—Smithsonian Institution: Bureau of Ethnology.
17th Annual Report ; 18th Annual Report, Part 1.

Washington :—Smithsonian Institution : Contributions to Knowledge.
Annual Report for 1898.
Miscellaneous Collections :—
A select Bibliography of Chemistry, 1492-1897.

Washington :—Smithsonian Institution, U.S. National Museum.
Report of U.S. National Museum, 1897 and 1898.
Bulletin, No. 47.
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Bulletins, 150–162.

Washington ;—Department of Agriculture.
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North American Fauna, Nos. 16, 18, 19.

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Transactions, Vol. 17, Part 1.
"The Session Booke of Bunkle."

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Cardiff :—Naturalists' Society.
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Dublin :—Royal Society.
Transactions, Vol. VII., Parts 2–7.
Proceedings, Vol. IX., Parts 1, 2.
Economic Proceedings, Vol. I , Parts 1, 2.
Index, 1877–1898.

Edinburgh :—Geological Society.
Transactions, Vol. 8, Part 1.

Edinburgh :—Botanical Society.
Transactions and Proceedings, Vol. 21, Part 4.

Edinburgh :—Scottish Meteorological Society.
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ADDRESS TO THE MEMBERS OF THE TYNESIDE NATURALISTS' FIELD CLUB.

READ BY THE PRESIDENT, W. MARK PYBUS, ESQ., AT THE FIFTY-SIXTH ANNIVERSARY, HELD IN THE COMMITTEE ROOM OF THE NATURAL HISTORY SOCIETY, ON THE 2ND DAY OF MAY, 1902.

LADIES AND GENTLEMEN,—When I was invited to accept the honour of nomination for the Presidency of your Club, I hesitated to attempt to follow in the footsteps of the many able and accomplished naturalists who had during over half a century presided over you, but being assured it was the unanimous desire of your Committee that I should allow myself to be nominated, valuing the distinction intended to be conferred upon me, and relying upon your indulgence and support, I allowed my name to go before you.

I thank you for the high honour you have done me in electing me as your President, and I trust the old traditions of the Club have been upheld during my year of office, and its usefulness in no way impaired.

My first duty is to bring before you and preserve for record the proceedings of the Field Meetings of the Club during the year.

The FIRST FIELD MEETING was fixed for Whit Monday, the 27th of May, the locality chosen being Stanhope and the neighbourhood.

A small number of the party preceded the main body and reached Stanhope on the Saturday.

The capital of Weardale stands on an elevation of about 700 feet, and is surrounded by hills of verdant pasturage merging into dark brown heather capped tops, the highest of which—Collier Law—rises to nearly 1,700 feet, though in the parish of Stanhope, Burnhope Seat reaches 2,452 feet.

The ancient Britons hunted in the forest of Weardale and made their homes in its caves. When the stalagmitic incrustation was removed from the bottom of Heathery Burn Cave, which lay between the Red Vein Mine and the lead

mills in Stanhope Burn, human skulls, boar tusks, knives, bronze bracelets, jet rings, spearheads, charcoal fragments of pottery, and several marine and other shells were found. The removal of the limestone several years ago destroyed all traces of this cavern.

When the palatine power of the Bishop of Durham was established in the eleventh century, Weardale forest became of great importance as the hunting ground of the princely Bishops. The forest services rendered by the tenants of the Manor furnish a most interesting chapter in the history of copyhold tenures.

After suitable arrangements were made in Stanhope, the advance party paid a visit to Blanchland. The road is very steep until Meadow's Edge (almost as high as Calder Law) is reached. From this high ground unfortunately a view of the valley could not be obtained in consequence of a thick mist which covered everything but the lower ground.

Lapwings, Grouse, Meadow Pipits, Golden Plovers, Starlings, Rooks, Geese, and Sheep attained gigantic proportions viewed through the magnifying powers of the mist.

The elevation of Blanchland is similar to Stanhope. The Derwent's well wooded banks add a great charm to the village.

Of the Abbey founded in 1175, nothing remains but the refectory which is now used as an inn.

The Abbey Church was repaired and turned into a chapel of ease in 1752.

The great number of visitors at the Lord Crewe Arms and the necessity of dining in sections made us late for the commencement of the service at the church. We proceeded as far as the door, intending to enter as silently as possible. Our progress however was arrested by the following notice attached to the door :—

"Divine service is now proceeding in this church. You are requested not to interrupt it, and to take this as a sufficient warning. J. C. D., Vicar.

Action will be taken on the first opportunity."

Rain fell heavily on the evening before our day of meeting, and its morning opened with leaden skies. This no doubt kept at home all but the most enthusiastic members.

The train left the Central Station at 7.40 a.m., and reached Stanhope at 10.33 a.m., the weather gradually improving all the way.

Ten members assembled at Stanhope Station and proceeded to the Phoenix Inn, by way of the well known "Lime Tree Walk." These twenty-six lofty trees when in flower diffuse a delightful fragrance along the street. At this time myriads of bees gather honey from the flowers. Honey from the Lime is superior to all others.

Allowing a breakfast interval to members of the party who had travelled from longer distances than Newcastle, we proceeded to inspect the market cross and the Church. The cross was erected in the year of the Market being granted, viz., 1669, and was restored in 1871.

Screeching Swifts circled in the air, and a pair of Starlings evidently had their young behind the church clock. Close to the churchyard a Corncrake gave voice to his presence.

The Church of St. Thomas has undergone considerable alteration, and has had many additions made to it. The lower part of the tower is of late twelfth century date. Contemporary with the tower were an aisleless nave and chancel. Very early in the thirteenth century a south aisle was added. The north aisle, which is of slightly later date, was probably built before the first quarter of that century was completed. At the same time the tower arch was inserted. The chancel was no doubt rebuilt when the south aisle was added. There is nothing distinctively characteristic in the architecture of the church which enables its date to be determined, but it may with great probability be ascribed to the fourteenth century. The porch is of quite uncertain date. The stained glass in the Church consists of a number of pieces of various dates, some early and some very late. The earliest, and also the largest fragment, represents a Bishop holding his crosier, and is ascribed to about the middle of the fourteenth century.

The marble font and step in the Church are formed out of the smaller and larger cockle "posts" of the limestone. The sundial, dated 1727, bears the motto "Ut hora sic vita." Several gravecovers are reared against the porch wall of the Church, and one is let into the wall. One bears a beautiful floriated cross of the thirteenth century. A coffin standing in the same place has been constructed out of a block of the large cockle "post." In the garden of the Rectory is an altar found in 1747 on Bolihope Common, about four miles south of Stanhope.

Under the guidance of Mr. Pattison, the courteous and well informed manager of the Ashes Quarry, we ascended the hill and examined the blue face of the Great Limestone. This stratum, which is seventy-two feet thick, is almost identical with the bed at the well known Frosterley quarries, from which marble for ornamental purposes has been largely quarried. The top covering is of a depth of about forty feet, and the quarrying of the rock was suspended in consequence of the great expense attendant upon the removal of this covering. A few months ago the quarry was purchased by the Consett Iron Company, and by means of improved appliances it is expected the industry will again become remunerative. Portions of the uncovered top of the limestone bed distinctively showed the scratchings and scorings of glacial action, but these unfortunately at the time of our visit had been quarried away. There are sixty solid feet of limestone rock, plate and shale to a depth of two feet, then twelve more feet of limestone. The stratum is composed of a series of deposits or leaves called by the quarrymen "posts." Each "post" has its name generally derived from some characteristic feature. The top are called the "Fine posts," that below "Toby Giles," the next, which is hard and difficult to break, is called "Crabby." Below this lies the "Mucky post," containing a little loam. We then come to a very beautiful part of the rock known as the "Pea post," so called from its containing numerous encrinites, which in a cross section are mostly the size of peas. Below this is a layer of fine stone,

clean and easily worked. This has been named "Elsy." Below are the "Small or Thin Cockle Post" and the "Large or Thick Cockle Post," which, when polished, are exceedingly beautiful. Below them are the "Toms," and under again are the "Black Beds." The five "Thin Posts" follow the "Black Beds," and then lie in order the "Dun Kit Post," "Dun Kits," "Bastard," and "Dun Jinn." The strong rock below is called "Stiff Dick," and it is followed by "Whaley," so called from an imaninary toughness similar to whalebone. The remaining four are called "Yard Post," "Jack Post," "Newcastle Post," and "Bottom Post." This limestone contains ninety to ninety-six per cent. of pure carbonate of lime, and it takes thirty-two cwts. to make a ton of agricultural or building lime. After obtaining some interesting specimens of the "Pea Post," the party proceeded in the direction of Stanhope Dene. Before leaving the quarry the Wall Rue *(Asplenium ruta-muraria)* was observed in considerable profusion. It was later seen growing on several old walls.

Proceeding in the direction of the burn we passed another extensive quarry, which had not been worked for many years. The formation was similar to the quarry already inspected, but here mineral veins had intruded themselves to a considerable extent.

In the large pond which had formed at the bottom of the working countless thousands of Tadpoles were swimming about. These, no doubt, from their darker colour, and the presence of several well grown young frogs, were the tadpoles of the Toad, which is developed later in the year. Young Water Newts were also observed in considerable numbers. Stickle Backs were also inhabitants of the pond.

The Dene was shortly afterwards entered, and eager search was made by the botanists for specimens of interest.

In the ramble Ferns were seen, but none worth placing on record. Amongst the plants observed were the following :—

Common Orchis, *Orchis mascula.*

Spotted Orchis, *Orchis maculata* (not in flower).

Garlic, *Allium ursinum.*

Yellow Bedstraw, *Galium verum.*
Crosswort, *Galium cruciata.*
Wood Vetch, *Vicia sylvatica.*
Forget-me-not, *Myosotis sylvatica.*
Herb Robert, *Geranium Robertianum.*
Floating-pond Weed, *Potamogeton natans.*
Mouse-ear Chickweed, *Cerastium triviale.*
Lesser Celendine, *Ranunculus ficaria.*
Cuckoo Pint, *Arum maculatum.*
Wood Sorrel, *Oxalis acetosella.*
Greater Stitchwort, *Stellaria holostea.*
Wood-rush, *Luzula sylvatica..*
Moschatel, *Adoxa moschatellina.*
Harebell, *Campanula rotundifolia.*
Three-fingered Saxifrage, *Saxifraga tridactylites.*
Golden Saxifrage, *Chrysosplenium oppositifolium.*
Sweet Woodruff, *Asperula odorata.*
Lady's Smock, *Cardamine pratensis.*
Wood Sanicle, *Sanicula europæa.*
Great Figwort, *Scrophularia nodosa.*
Cowslip, *Primula veris.*
Primrose, *Primula vulgaris.*
Ivy Crowfoot, *Ranunculus hederaceus.*
Goldilocks, *Ranunculus auricomus.*
Buttercup, *Ranunculus acris.*
Watercress, *Nasturium officinale.*
Wall Draba, *Draba muralis.*
Whitlow-grass, *Draba verna.*
Milkwort, *Polygala vulgaris.*
Wood Stitchwort, *Stellaria nemorum.*
Rock Cress, *Arabis hirsuta.*
Water Mint, *Mentha aquatica.*
Thyme-leaved Sandwort, *Arenaria serpyllifolia.*
Bulbous Crowfoot, *Ranuuculus bulbosus.*
Marsh Marigold, *Caltha palustris.*
Yellow Rocket, *Barbarea vulgaris.*
Scurvy Grass, *Cochlearia officinalis.*

Field Chickweed, *Stellaria media.*
Bitter Vetch, *Lathyrus macrorrhizus.*
Water Avens, *Geum rivale.*
Wood Strawberry, *Fragaria vesca.*
Wild Marjorum, *Origanum vulgare* (not in bloom).
Common Bugle, *Ajuga reptans.*
Pink Campion, *Lychnis diurna.*
Hairy Bitter Cress, *Cardamine hirsuta.*
Greater Toothwort, *Lathræa squamaria* (on roots of the Elm).
Yellow Toadflax, *Linaria vulgaris* (not in bloom).
Wood Geranium, *Geranium sylvaticum.*
Earth Nut, *Conopodium denudatum.*
Bush Vetch, *Vicia sepium.*
Brooklime, *Veronica beccabunga.*
Vernal Sandwort, *Arenaria verna.*
Water Buttercup, *Ranunculus aquatilis.*
Sweet Cicely, *Myrrhis odorata.*
Wood Violet or Dog Violet, *Viola canina.*
Penny Cress, *Thlaspi alpestre.*

The last-named, a comparatively rare plant, and undoubtedly the find of the day. It occurs in only fourteen out of the one hundred and twelve counties into which Britain is divided in the "London Catalogue." In Volume II. of the Natural History Transactions it is referred to on page 123, when it is stated to show a preference for lead mines. Only one station in Weardale is given, somewhat higher up than we found it, and on the other side of the stream, but no doubt it has spread since Volume II. was published.

The Bird Cherry and Plane Trees were in full bloom. The Elm and Willow were in fruit.

In addition to the birds I have already named, the following were seen:—Chaffinch, Blackbird, Lark, Jackdaw, Pied Wagtail, Wood Wren, and Cuckoo.

In the bed of the river a considerable quantity of Basalt has intruded itself.

The party then returned to the Phœnix Inn, where a modest repast was highly enjoyed.

The return train was caught at 6.46 p.m., reaching Newcastle about 9.0 p.m., when the party separated, well satisfied they had been so agreeably surprised with the weather conditions.

The Second Field Meeting of the Club was fixed for the Farne Islands on the 20th of June. The morning broke with that clear liquid sunshine which is generally an indication of rain. Some members resident out of Newcastle manifested their interest by rising at four o'clock in order to catch the earlier train to Seahouses. The greater number, however, assembled in the Central Station, and starting by the 8.20 a.m. train, reached Seahouses about 10.40 a.m. A short stay was made at Mrs. Cuthbertson's Inn, in order that some members of the party who had had a hurried breakfast might have luncheon before crossing to the Islands.

The weather, which had been dull and threatening on the journey, now improved, and Bamburgh and Holy Island Castles were prominent features in the landscape.

Two cobles conveyed the party to the Islands. A doubt was expressed by the crews as to the prudence of proceeding to the Megstone, having regard to the state of the sea, but I saw nothing to prevent a landing, and my views proved to be correct, as the gut on the north when reached had scarcely a ripple upon it. In sailing across, numerous Cormorants, Eiders, and Puffins were observed skimming over or resting on the sea. Our boatmen mentioned several whales had been observed this year, and from the description they gave us I gathered these must have been the Pilot Whale or Bottle Nose *(Globicephalus sniveal)*. The Grey Seal *(Halyctiaerus gryphus)* breeds on the Crumstone, and the Common Seal *(Phoca vitulina)* is not uncommonly seen amongst the Islands.

As we neared the white topped crest of the Megstone, Arctic or Common Terns and Kittiwakes were observed in

considerable numbers flying over the lower parts. The nearness to the rock was evidenced by the odour it gave off. The Cormorants slowly took wing as the party landed, and ascended to the nests. These numbered probably over one hundred, but many were empty, and others contained small numbers of fresh eggs. With one exception the birds hatched had not been more than a day or two out of the shell. The young birds with their tough looking bare skins appear at a first glance more like rubber toys than anything else. As we left the Island we observed three or four birds carrying material for nests. These are early nesting birds, and the backward state of the nests, eggs, and young clearly indicated serious interference before our visit, and amply demonstrated the accuracy of the report which had reached us from a member of the Coast Club who visited the Islands on the 8th of June, namely, that two of the boats' crews landed on the Island, and observing that Cormorants consumed numbers of fish, threw many of the eggs against the rock, into other nests, and into the sea. Most of these eggs were about hatching. They piled several nests on the top of each other, and giving effect to their views "protected" the fish as far as time would allow. Not less than a third of the eggs were destroyed. This conduct was reported to the Watcher on the Farne, who said he had named the subject to the Secretary of the Association now leasing the Islands, and as a larger boat would be necessary to go to the Megstone, and as when he was away the eggs of the Sandwich Terns might be taken, nothing could be done. If this persecution of the Cormorant continues I am afraid the Megstone will loose the very great interest it has always had for the ornithologist. It is, however, much more pleasant to record that several of the birds have made their nests, and are rearing their young on the Big Harcar, where I trust they will be better guarded. I was glad to be informed the Shag, always a scarce bird here, was nesting this year on the Harcar, but we had commenced our sea journey too late to visit the rock.

We next landed on the historical Farne, and inspected its

Chapel Tower and "Churn." The Chapel was erected in 1370, and restored in 1848. Its condition is one of neglect. Through its roof the sky can be seen, and part of its stained glass is lying on the masonry of the lower part of the windows. We were told no service has been held here for about three years. A valuable oak chest has also of recent years been removed. Prior Castell's Tower, which was erected about 1500 for defence, and used in the reign of Elizabeth as a fort, was explored, but it has lost much of its interest in consequence of the removal a few years ago of its panelling of old oak-carving which came from Durham. We were told this can now be seen in a comparatively modern residence at Monks House on the Mainland. The sea was too calm for us to observe the "Churn" in its activity, but it is said that water is forced through this narrow channel and rises into the air to a distance of 100 feet. I have seen the "Churn" working several times in rough weather, but I estimated the water never rose more than 30 feet from the rock. The great Whin Sill forms the bulk of these Islands, and in places vertical sections of the basaltic sheet show fine columnar jointing. This is particularly noticeable on the west and south sides of the main island, and where the rock attains an altitude of about 80 feet. I have not counted the number of rocks or islands, but I believe it is quite accurate to state they are 15 to 25 according to the tide. Over the basalt of the Farne we observed a bed of boulder clay.

The donkey on the Island has a great liking for beer and tobacco. We had no beer to give him, but cigarettes he chewed up greedily.

We next visited the Knoxes, but our stay was very limited, as the Watchers have instructions that eggs won't hatch if left by the parent birds for more than 15 minutes. There were several nests of the Arctic or Common Tern, probably the former, as I think as a rule the eggs of this bird are slightly smaller, more pear-shaped, more olive in their tints, and show greater variety. The nests contained one, two, and three eggs each, mostly two. They showed great variation in

ground colour and markings, and some of them were hatching. The eggs of the Sandwich Tern were within the surrounding belt of nests of the smaller birds, and these presented some features of interest. In one "nest"—if the bare sand and shingle may be so called—an almost purely white egg lay alongside one deeply blotched with rich brown. A few birds had just been hatched, but the accidental breakage of an egg indicated that some of the eggs must have been laid very late in the year, probably as a result of the destruction of the first lots. These birds go to nest earlier than the Arctic or Common Terns. It appeared to me there were not so many nests as in former years, but on another part of the Island which we did not visit additional birds were nesting, though we were told they were not so numerous as the colony we saw. Five or six nests of the Eider and Oyster Catcher were seen. One set of the eggs of the Oyster Catcher were about hatching. The Duck left her eggs, but walked about within a few yards, and showed no inclination to take flight. Marvellous tales are told of the numbers of eggs laid in nests of the Eider—one man saying he had seen no less than nineteen. I am afraid I can scarcely accept these accounts, for I have only once seen as many as seven. Five generally is the number, and frequently only four. The "nests" of the Oyster Catchers contained one, two, and three eggs. We were told two or three pairs of the Roseate Tern were nesting on this Island, but we did not see the birds or any eggs, and I think I can distinguish the eggs from those of either the Arctic or Common Terns.

To others of the party the sea beach and pieces of rock on the Island presented features of geological interest.

We next sailed for the Staple or Pinnacle Island, which, with a good breeze, we quickly reached. Rain was falling, and a haze obscured Bamburgh and Holy Island. Here, again, under the partially formed peat, the boulder clay was observed. A few Puffins were drawn from their burrows, and their eggs examined. The birds, on being released, were quite unable to rise from the level ground, and had to reach the

descent to the sea before they could take wing. The Lesser Black-backed Gull was nesting in considerable numbers, but there were not so many birds or eggs as I have seen in past years. I understand the Association now in possession of the Islands are desirous of decreasing these birds, and for edible purposes send large numbers of their eggs to Bamburgh, Cragside, and probably elsewhere. It was of great interest to me to see three nests of this bird containing four eggs and two nests containing five each. Probably the eggs were those of one bird, but the number was large. I thought one of the nests containing five eggs was open to some doubt, but the other I believe to be genuine. The Watcher gave me an account of observing it from day to day, and I had no reason to doubt any of his statements. The length of life of this bird is difficult to ascertain, but a Mrs. Leighton kept one on the mainland for twenty-two years, and then its death was caused by violence. Only one Herring Gull was observed. These birds have always been scarce on the Islands. It is difficult to account for their numbers not increasing. Rock Pipits were not seen, and we were told they are now very scarce.

We next proceeded to view the Pinnacles with their Guillemot-covered tops. No inch of room was unoccupied, but we could see little of the eggs. One ringed bird was observed. The Guillemots appeared in much the same numbers as in previous years. Kittiwakes were nesting in great numbers on the sides of the Island and the ledges of the Pinnacles. Some young birds were hatched, but most of the nests had eggs in them. Four nests on a ledge were touching each other. These birds I think are certainly an increasing species. The Razor-bill was not seen, but the Watchers reported two or three nesting birds. The adjoining Brownsman where the Watchers reside in the old lighthouse was not visited, but they stated several pairs of Common Terns were nesting there.

We next visited one of the Wamses, where several Lesser Black-backed Gulls were nesting. One nest contained two very dark brown eggs, and one a beautiful light blue.

Another set of eggs was similar, but neither brown nor blue were so intense. Ring Dotterels were not observed, but no doubt we were too late to see any eggs.

Time now pressed, as some members desired to catch the earlier train, so again we set sail with a fair wind, and reached Seahouses with a no more serious occurrence than the loss of a hat, which in putting about was carried away by the boom.

There are few notable nesting places of birds in Great Britain which I have not visited, but I know of no place more interesting than the Farne Islands—not from the number of birds, which can be very greatly exceeded—but from the great variety to be found on these small islands or rocks.

Mr. Hancock, in his introduction to his "Birds of Northumberland and Durham," enumerates the following as having nested on the Islands :—Ring Dotterel, Oyster Catcher, Lesser Black-backed Gull, Herring Gull, Kittiwake Gull, Sandwich Tern, Common Tern, Arctic Tern, Roseate Tern, Cormorant, Shag, Eider Duck, Guillemot, Puffin, and Razor-bill.

I have myself verified the nesting of the following additional birds :—Rock Pipit, regularly; Jackdaw, commonly; Shieldrake, Hedge Sparrow, Heron, Carrion Crow, and Lapwing, probably accidentally or only occasionally.

The following birds have also been observed on or in the vicinity of the Islands during the nesting season :—King Eider, Great Black-backed Gull, Manx Shearwater, and Tufted Duck.

Botanists were well represented in the party. The most of these visited the Islands, but a smaller section journeyed along the coast in the direction of Budle Bay. Amongst the plants noticed by those who visited the Islands were the following :—

Sea Campion, *Silene maritima.*
Danish Scurvy Grass, *Cochlearia Danica.*
Common Sea-milkwort, *Glaux maritima.*
Small Bugloss, *Anchusa Aritensis.*
Purple Sea Rocket, *Cakile maritima.*

Silverweed, *Potentilla anserina.*
Birds-foot Trefoil, *Lotus corniculatus.*
Foeted Iris, *Iris foetidissima.*

Amongst the plants observed by those who journeyed along the shore between Seahouses and Budle Bay were the following :—

Storks Bill, *Erodium cicutarium.*
Marsh Orchis, *Orchis latifolia.*
Spotted Orchis, *Orchis maculata.*
Hounds Tongue, *Cynoglossum officinale.*
Vipers Bugloss, *Echium vulgare.*
Slender Thistle, *Carduus pycnocephalus.*
Sea Sandwort, *Honckeneja peploides.*
Milk Vetch, *Astragalus hypoglottis.*
Sea Milkwort, *Glaux maritima.*
Varicoloured Forget-me-not, *Myosotis versicolor.*
Common Mallow, *Malva sylvestris.*
Cross-leafed Heath, *Ereca tetralix.*
Buckbean, *Menyanthes trifoliata.*
Greater Red Rattle or Lousewort, *Pedicularis palustris.*
Lesser Red Rattle or Lousewort, *Pedicularis sylvatica.*
Great Valerian, *Valeriana officinalis.*
Heath Bedstraw, *Galium saxatile.*
Henbane, *Hyoscyamus niger.*
Butterwort, *Pinguicula vulgaris.*

Mrs. Cuthbertson provided us with a satisfactory dinner, and after electing two new members, the party left Seahouses by the 6.5 p.m. train, much interested in the ornithology of the Islands.

The Third Field Meeting took place at the historical and restful village of Otterburn on Wednesday, the 10th of July. The train left Newcastle Station at the early hour of 6.15 a.m., and as some of those present had to undertake a railway journey, or drive some distance before reaching Newcastle, it was gratifying to find about a dozen members

gathered at Miss Snaith's unpretending but most comfortable and well managed Inn the "Murray Arms."

On the drive from Woodburn Station to Otterburn a Curlew settled by the side of the road and walked backwards and forwards undisturbed by the closeness of our presence. I mention this as I have always found these birds most difficult to approach, and it has only been by stratagem that I have ever been able to come near to them. After enjoying an excellent breakfast, we visited the church, but this is a modern structure, having been built so late as 1857. It, however, possessed a particular interest to our worthy secretary, Mr. Adamson, he and his wife being the first couple married in it. A glimpse was obtained of Otterburn Tower, which is now in the market for sale. The northern corner of a modern tower incorporates part of the walls of the old Castle besieged by the Scots for several days before the battle of Otterburn. The site of the battlefield, or what is supposed to be the site of the battlefield, was visited. A "Cross" in the form of an arrow-pointed stone, for support let into a circular stone, which is further strengthened by a round wall of apparently modern masonry, was inspected with interest. This "Cross" now stands in a wood not far from the highway, and probably a little more than a mile from the village of Otterburn. It is said to mark the spot on which Douglas fell, but there can be little doubt this "cross" formerly stood some distance away from its present site. The drive was resumed, and much interest was manifested in the miniature locomotives with carriages and trucks travelling upon a very narrow line of rails which have been laid near to the highway between Woodburn and Catcleugh, the site of the new reservoir of the Newcastle and Gateshead Water Company. It is used for the purpose of conveying pipes and other material, and a branch of it for the clay used in the dam. The country is here very wild and interesting, and the atmosphere of the greatest purity. At Catcleugh a temporary village of wooden houses has been erected for the residence of some six or seven hundred navvies and their families. The reservoir will consist

of a natural formation, supplied with water by the streams rising in Carter Fell and the adjoining hills. For the retention of the water it has been necessary to build a high dam which crosses the Reed. Difficulties have been experienced in securing a reliable foundation, and in consequence of this it has been necessary to go to a very great depth to obtain a firm support. In the centre of the broad dam crossing a valley there are two strong walls of concrete, and the space between these is being filled up to a great depth with puddled clay. There had been some misunderstanding as to the time of our visit, and we had not the benefit of the explanation we expected from the engineer in charge of the works. The reservoir is in an early stage, but from an inspection of the district it appeared to us that though very great depth will not be obtained, yet an enormous body of water must be retained by the dam. After the inspection of the reservoir, attention was given by those interested to the botany of the district, and the following is a list of the principal plants noticed by them :—

Nipplewort, *Lapsana communis.*
Rose-bay Willow-herb, *Epilobium angustifolium.*
Common Barberry, *Berberis vulgaris.*
Mouse-ear Hawkweed, *Hieracium pilosella.*
Germander Speedwell, *Veronica chamædrys.*
Wall Speedwell, *Veronica arvensis.*
Creeping Crowfoot, *Ranunculus repens.*
Knotted Figwort, *Scrophularia nodosa.*
Eyebright, *Euphrasia officinalis.*
Woundwort, *Stachys sylvatica.*
Milkwort, *Polygala vulgaris.*
Tormentil, *Potentilla tormentilla.*
Crosswort, *Galium cruciatum.*
Melancholy Thistle, *Cnicus heterophyllus.*
Early Purple Orchis, *Orchis mascula.*
Scented Orchis, *Gymnadenia conopsea.*
Spotted Orchis, *Orchis maculata.*

Green Man Orchis, *Aceras anthropophera.*
Self-heal, *Prunella vulgaris.*
Ragged Robin, *Lynchis flos-cuculi.*
Tufted Vetch, *Vicia crecca.*
Hedge Bedstraw, *Galium mollugo.*
Larger Knapsweed, *Centaurea scabiosa.*
Meadow Vetchling, *Lathrys pratensis.*
Mouse-ear Chickweed, *Cerastium vulgatum.*
White Flax, *Linum catharticum.*
Water Mint, *Mentha aquatica.*
Gout Weed, *Ægopodium podagraria.*
Lady's Smock, *Cardamine pratensis.*
Spring Vetch, *Vicia lathyrides.*
Marsh Thistle, *Cnicus palustris.*
Ivy-leafed Toadflax, *Linaria cymbalatia.*
Northern Bedstraw, *Galium boreale.*
Heath Bedstraw, *Galium laxatile.*
Field Scabious, *Knautia arvensis.*
Water Bedstraw, *Galium palustre.*
Biting-stone Crop, *Sedum acre.*
Wood Cranes-bill, *Geranium sylvaticum.*

At the side of the road between Otterburn and Catcleugh are poles erected carrying twenty-five telegraph wires. At several places on these wires there were perched flocks of Swallows and House Martins. Had it not been so early in the year we should have concluded they had gathered together prior to leaving us for a warmer climate. None but the commonest birds were noticed, but all allowed a close approach, and showed little fear. I was much pleased to learn from a source which leaves no doubt of the fact that this year the Raven has been allowed to rear her young not many miles from Otterburn.

The eleven miles drive from Catcleugh to Otterburn was commenced shortly after three o'clock in the afternoon. On the road, though the sky appeared perfectly clear, the distant rumblings of thunder were heard. The conveyances were stopped at High Rochester for the purpose of visiting the

remains of the Roman Camp (Bremenium), an important station destined to guard the mountain passes traversed by Watling Street. This camp covers an area of $4\frac{1}{4}$ acres, and the arrangements for draining and heating are evidence of high sanitary skill. As we walked in the direction of the Roman camp a blackness gathered over the sky, and thunder was evidently approaching us. In the distance rain was falling heavily, and appeared to be travelling rapidly towards us. Few of us were provided with umbrellas or waterproofs, and reluctantly we were obliged to return to the conveyances. Every effort was made to reach Otterburn without a wetting, and in this we were mainly successful. Close to the village a very heavy fall of rain overtook us, but we obtained the shelter of the "Murray Arms" before becoming uncomfortably wet. An excellent meal provided by Miss Snaith was thoroughly appreciated by all the members of the party, and by this time the black clouds had rolled away, and in the bright sunshine the return train was caught at Woodburn at 7.56 p.m.

The Fourth Field Meeting was fixed for Whittingham on the 15th of August. Rain fell heavily the night before the meeting, and its morning was dull and threatening. This, no doubt, was the cause of a small gathering.

By the time Whittingham was reached the sky had considerably cleared, and the sun was showing itself. This was an inducement to members who had provided themselves with waterproofs to leave these at the "Castle Inn," where an early dinner was arranged for. The party then proceeded to Callaly by way of Thrunton Crags. Mushrooms in abundance were seen in the fields. When the foot of the crags was reached the sky was beautifully clear, and the sun's rays were very powerful.

There is a gradual ascent to the top of the crags, but we appear to have gone too far to the right and missed the regular path. We ascended the steep face partly walking and at times climbing. Flies were everywhere. Our hats were covered with them, and a little relief to our faces could only

be obtained by waving in front of us tufts of heather or bracken fern.

Notice boards in several places gave warning that anyone carrying away ferns would be prosecuted. This led us to expect some of the rarer ferns, but we saw nothing excepting large beds of Bracken with fronds quite six feet high. Broad-buckler Ferns in great profusion, Male Ferns and Hard Ferns were also by no means scarce. There was no indication of these being interfered with, and it is scarcely likely that any-one would take the trouble to dig them out.

The fine-leaved and cross-leaved heaths were growing side by side. When the top of the crags was reached we found ourselves well repaid for our climb by the magnificient view we obtained over the fertile vale of the Aln, the yellow and yet uncut grain making a lovely background to the green of the Firs and Larches growing on the lower hills facing us.

A walk of about a couple of miles brought us in view of Callaly Castle. Here we descended the Crags to the village. On the way a very large Rowan tree covered with bright red berries indicated the passing of the summer, and added a great charm to the hillside. In one of the village gardens our attention was called to a Laburnum tree from which large seed pods were hanging in exceptional numbers, yet all the bark evidently years before had been torn from the stem of the tree with the exception of a strip not more than an inch or so wide.

On our journey the following plants were observed :—

Great Willow Herb, *Epilobium hirsutum.*
Meadow Sweet, *Spirea ulmaria.*
Red Bartsia, *Bartsia odontitis.*
Eyebright, *Euphrasia officinalis.*
Purging Flax, *Linum catharticum.*
Heather or Ling, *Calluna vulgaris.*
Potentilla, *Potentilla tormentilla.*
Bleaberry, *Vaccinium myrtillus* (in fruit).
Cowberry, *Vaccinium vitis-idœa* (in fruit and flower)
Fine-leaved Heath, *Erica cinerea.*

Cross-leaved Heath, *Erica tetralix.*
Hairy Woodrush, *Luzula pilosa.*
Wood Sorrell, *Oxalis acetosella.*
Ragwort, *Senecio Jacobæa.*
Herb Robert, *Geranium Robertianum.*
Lesser Willow Herb, *Epilobium montanum.*
Enchanter's Nightshade, *Circœa lutetiana.*
Forget-me-not, *Myosotis palustris.*
Selfheal, *Prunella vulgaris.*
Greater Bird's-foot Trefoil, *Lotus uliginosus.*
Cinquefoil, *Potentilla reptans.*
Greater Knapweed, *Centaurea scabiosa.*
Harebell, *Campanula rotundifolia.*
Tufted Vetch, *Vicia crecca.*
Germander Speedwell, *Veronica chamædrys.*
Ground Ivy, *Nepeta glechoma.*
Meadow Cranes-bill, *Geranium pratense.*
Chickweed-winter-green, *Trientalis europœa* (out of bloom).
Crowberry, *Empetrum nigrum.*
Evergreen Alkanet, *Anchusa sempervirens.*
Aaron's-rod or Mullein, *Verbascum thapsus.*

Bird life was very scarce, and nothing was observed of any interest. Thrunton Crags thirty years ago were the constant haunt of numerous Kestrel and Sparrow Hawks, but about this time the keepers commenced their work of destruction and cruelty. Birds were not only shot down, but when taken alive were fastened by the legs to the hedges in front of the keeper's house and there left to starve to death.

We reached Whittingham considerably before the hour fixed for dinner, and we spent the time in an examination of the village. The north side of the stream is known as the Church Town, the principal buildings being the church, vicarage, and schoolhouse. The Church of St. Bartholomew stands on the site of a Saxon edifice supposed to have been founded in the middle of the eighth century by King Ceolwulph, and retains in its tower a portion of the original structure. The church was restored in 1840. A part of the

old building is also to be found in the return angles of the nave on both the north and south sides, and there is an old piscina in the south wall. On entering the churchyard an ancient stone Latin Cross will be found fixed into the wall near to the east stile. This may have been a boundary or Churchyard Cross. It was found in the north wall of the Church on the restoration in 1840. On the south side of the stream there is an ancient Peel Tower, which is now used as an almshouse. In the basement of this building the walls are nine feet thick. The village of Whittingham has been a place of some note from very early times, though the details of its history do not appear to have been preserved with much care. It is said that here Synod, in the presence of King Egfrid, A.D. 674, chose Cuthbert as Bishop of Lindisfarne. In the year 1640, during the Civil War, 400 horse appear to have rested here, and in 1648 the village was visited by Cromwell's Roundheads, who captured Lieutenant-Colonel Millet with 200 horse.

After our inspection of the village we dined together at the "Castle Inn," and having ample time we walked over to Glanton, and there caught the train to Newcastle, which was reached about ten o'clock, a very enjoyable day having been spent.

The FIFTH FIELD MEETING was held at Gilsland on the 9th of September. Some members left the Central Station, Newcastle, by the 8.15 a.m. train, whilst others followed more leisurely at 10.25.

After making suitable arrangements at the Station Hotel, the first section of the party proceeded by conveyance to pay short visits to objects of interest lying between Gilsland and Naworth, it being their intention to return by train in time to join the later party in a visit to the Waterfall botanizing by the way. The day was fine, but a slight haze prevented us from seeing Cross Fell and the mountains of the Lake District. Near the farmhouse we had a view of what remains of the once noted Norman Fortress or Castle of Triermain. In

passing through the farmyard we found a good sized specimen of the Male Fern growing out of a stable wall about six feet from the ground. It must have depended entirely upon the atmosphere, any leak there might be in the spout, and such particles of dust as might be carried to its roots.

After borrowing the keys and making an inspection of the altars, the inscribed stones, and fragments of pottery which have been discovered at Birdoswald or in its vicinity, we proceeded to the top of the bold cliffs which guard the station on the south, and at the foot of which the Irthing flows and here receives the waters of the Midgeholm bog. The Nine Nicks of Thirlwell stood boldly out in the distance, and the great beauty of the entire surroundings of the place are not likely to be readily forgotten. Swallows were numerous, and looking as though they were gathering together for their return journey. A Mallard flew round us, but we ascertained on enquiry it had been hatched by a domestic duck belonging to the farm.

The western side of the station is its weakest. On the edge of the northern slope approaching the station some artificial lines of defence are visible, and it has been suggested these were the remains of a Saxon or Danish Fortress. Birdoswald, the Amboglanna of the Romans, is the twelfth station on the line, and a little over three miles from Carvoran. It is the largest station on the line, having an area of five acres and a half. There are two gates in both its eastern and western ramparts. The walls of the station are in a moderate state of preservation. The southern rampart shows eight courses of facing-stones. The walls are five feet thick. Traces remain of the moat which surrounded the walls. On the east side of the station the appearances indicate the existence of dwellings. Probably this station was built before the Wall. The north gateway has been destroyed, and all there is left of the most northerly of the west gates is a heap of ruins. The other gateway on this side is in very good condition. Marks of wheel ruts are to be seen, and the pivot holes remain. The south gateway is double, and is a very good specimen of

Roman work. The portals are eleven feet wide, and have been spanned by arches. The pivot holes are there. This gateway has two guard chambers. Both the gateways on the eastern side have been exposed. The lower one is much distorted by defective foundations. The other is in very perfect order, and is also double with guard chambers on each side. Several circular door-heads have been found in the vicinity of the gateway. An excavation has disclosed the remains of a tank from which water was filtered by passing it through a mass of charcoal. The cistern was fed by a spring on the west of the station, and a water course between the spring and the tank consisted of flat stones set up on end covered over by a third on the top, the whole being sunk in the ground. Between Birdoswald and Coombe Crags the fosse of the wall and the earthworks of the vallum are very bold. Here the vallum is supported on the northern side by a second ditch. After a short drive we reached the path leading to Coombe Crags, and were interested in an inspection of the inscriptions on the face of the rock. These are said to have been made by Roman workmen, but doubts have been expressed as to whether they are not of much more recent date. In passing down the well-wooded banks of the Crags dark clouds gathered, and rain soon began to fall heavily. This caused us to proceed back to the conveyance, where we had left our coats, but after waiting a time without any sign of the rain ceasing, we drove on to Lanercost Priory, which appears to have been founded by Robert de Vallibus, Lord of Gilsland, about 1169. In 1296 the monastery suffered by an invasion of the Scottish forces. During the winter of 1306–1307 King Edward I. and his queen resided in the monastery. On the suppression of the monasteries Lanercost was granted to a branch of the Dacre family, but in 1716 reverted to the Crown. It now belongs to the Earls of Carlisle by purchase. The nave of the priory Church is the only portion which is in repair, and this is used as the Parish Church. The choir and transepts are roofless. Several of the monastic buildings remain. The site of the cloisters is now used as a garden.

The refectory on the south side of the cloisters has been thrown down, but the cellars below it remain. The dormitory was on the west side of the cloister, and is often mistaken for the refectory in consequence of a fireplace having been inserted in it. The buildings are almost entirely composed of stones procured from the Wall. In the crevices of the stonework the Wallflower and Male Fern were growing in considerable numbers, and in the steps the Ivy-leaved Toadflax was very plentiful. The day having brightened considerably, we proceeded in search of a light luncheon. The roadside inn, where on a previous visit we had found everything so beautifully clean and tempting, had been done away with by the owners of the estates, and we therefore proceeded to the Temperance Inn, the subject of their care and encouragement. We had scarcely crossed the threshold until the odour of dirt and an illkept establishment reached us. What little luncheon we procured was served on a bare table, without even a knife to eat it with, and a squalid looking child sat on the table.

Ascending the rising ground we shortly reached Naworth Castle. Magnificent oak trees stand near the entrance gateway, on which tradition says Belted Will used to hang mosstroopers who fell into his hands. The Castle is built on the edge of a platform nearly insulated by a deep gully. Nearing the entrance we observed the Maidenhair Spleenwort growing out of the mortar of the walls. The great hall of the fortress is redolent of heraldic grandeur—the Greystock dolphin, the Howard calf, and the Dacre bull and griffin being made to support the banners of the house. The walls are covered with ancient tapestry still in excellent preservation. The private apartments of Lord William, and the careful manner in which he guarded the approach to them, and the descent to the dungeons, are well worth a very careful inspection. The ancient library and the well preserved oaken furniture possess great interest.

We returned by the riverside to where we had left our conveyance, examining the plants, though most of these had now

ceased to flower. Amongst those observed by us were the following :—

Common Valerian, *Valeriana officinalis* (top stem had been lopped off, and plant had thrown up another stem and bloomed late).
Herb Robert, *Geranium Robertianum.*
Marsh Sorrel, *Rumex aquaticus.*
Water Mint, *Mentha aquatica.*
Harebell, *Campanula rotundifolia.*
Dwarf Furze, *Ulex nanus* (in flower).
Wallflower or Gillyflower, *Chieranthus Cheiri.*
Ivy-leaved Toad-flax, *Linaria cymbalaria.*
Hedge Bedstraw, *Galium mollugo.*
Mercury Goose-foot, *Chenopodium bonus-henricus.*
Creeping Crowfoot, *Ranunculus repens.*
Self-heal, *Prunella vulgaris.*
Wild Strawberry, *Fragaria vesca.*
Trailing St. John's Wort, *Hypericum humifusum.*
Wall Pellitory, *Parietaria officinalis.*
Enchanter's Nightshade, *Circœa lutetiana.*
Wood Sage, *Teucrium scorodonia.*
Field Woodrush, *Luzula campestris.*
Dog Violet, *Viola canina.*
Umbelled Hawkweed, *Hieracuim umbellatum.*
Yellow Loosestrife, *Lysimachia vulgaris.*
Devil's-bit Scabious, *Scabiosa succisa.*
Large Horsetail, *Equisetum maximum.*
Dogs Mercury, *Mercuralis perennis.*
Greater Celandine, *Chelidonium majus.*
Foxglove, *Digitalis purpuræ.*
Red Campion, *Lychnis diurna.*
Betony, *Stachys betonica.*

FERNS.

Male Fern, *Lastrea filix-mas.*
Broad Buckler, *Lastrea dilatata.*
Hard Fern, *Lomaria spicant.*
Bracken, *Pteris aquilina.*

Maidenhair Spleenwort, *Asplenium trichomanes.*
Polypody, *Polypodium vulgare.*

We had been obliged to give up all thought of botanising in Gilsland in consequence of the great quantity of rain which had fallen. We therefore proceeded leisurely back by conveyance. Tindle-Fell, with a top of inky blackness, was prominent all the way, but the full blooming small whin gave a beauty to the fields adjoining the highway.

The two sections of the party dined together at the Station Hotel, and the return train was taken for Newcastle at 7.13 p.m.

The Sixth and last Field Meeting was held at North Shields and Cullercoats on the afternoon of the 10th of October. About thirty members and their friends gathered together. A visit was paid to the Fish Quay, and through the courtesy of Mr. Irvin some of the members inspected the trawlers which were about proceeding to sea again. Professor Meek, with his usual kindness, had made arrangements for having preserved for the inspection of the members the various things brought up in the trawl nets with the fish. The boats had experienced very bad weather, and what had been kept was very much less than it otherwise would have been. Specimens were obtained of mollusca, crustacea, and sea anemones. These were in excellent condition, but there was nothing amongst them but what is quite commonly found off the coast.

The party proceeded to the Marine Laboratory, and inspected the living specimens in the tanks. A lobster which had recently cast its shell was exceedingly interesting. The shell with no break perceptible in it to a casual observer can now be seen. Professor Meek and Mr. Gibson, who was assisting him, gave very full particulars of the preserved specimens, principally those obtained on the recent dredging expedition of the "Stanley." The crustacea are now being carefully gone over by Professor Meek, who has kindly promised for the Hancock Museum such duplicates

as the Curator may desire to add. I refrain from dealing with the specimens in detail, as when Professor Meek completes his investigation he has undertaken to contribute the history of the expedition and its results for preservation in the transactions of the Club.

Votes of thanks to Professor Meek and Mr. Gibson ended an enjoyable afternoon.

Evening Meetings.

During the winter the usual series of Evening Meetings, six in number, have been held in conjunction with the Natural History Society. At the first of these meetings on October 22nd, under the chairmanship of the Rev. J. M. Hick, the Rev. A. Watts, F.G.S., read a paper on "Some New Sinkings at Derwenthaugh," describing a series of borings made by the Consett Iron Company, and drawing interesting conclusions from the nature of the glacial drift and the contour of the underlying rock-head. The Curator of the Museum, Mr. E. L. Gill, exhibited a few specimens, and read some notes on birds observed during the autumn.

On November 19th, with Professor Potter in the chair, the Rev. W. J. Wingate read a paper entitled "Life on a Window Pane." He reviewed briefly, with the aid of a large number of diagrams, the families of British Diptera, and appealed for recruits to the study of this much neglected order, and to make such study easier Mr. Wingate is presenting his own collection to the Museum, so that it may be available as a help in the difficult work of identification.

At the third meeting on December 10th, with your President in the chair, the Rev. R. Stewart Wright delivered a lecture on "The Habits and Customs of the Amambwe of Lake Tanganyika," illustrated by the collection of native implements presented to the Museum by the lecturer himself. The lecture was a remarkably interesting one, and all who were present regretted that it was so poorly attended. At the close of the lecture the Rev. J. M. Hick exhibited and explained a

series of examples of protective mimicry amongst tropical butterflies of both hemispheres.

At the meeting of January 21st, Mr. C. F. Harkus in the chair, Mr. D. Woolacott, M.Sc., gave a lecture entitled "Some Notes on the Permian Rocks." The lecture was an admirable account of the Permian formation of the district, illustrated by lantern views of quarries, cliff-sections, and rock structures.

On February 18th, under the chairmanship of the Rev. J. M. Hick, the evening was devoted to a lecture by Colonel Adamson, entitled "Notes on Burmese Butterflies." Colonel Adamson gave many interesting reminiscences of his experiences as a collector in Burmah, and called special attention to a number of remarkable instances of seasonal dimorphism and protective mimicry. These were illustrated by examples from his own collection.

At the last meeting on March 18th, Mr. R. Adamson took the chair. Extracts from the Hancock Prize Essay by Mr. James Caygill, of Consett, were read by Mr. E. L. Gill, and Professor G. S. Brady, F.R.S., then read his "Report on Marine Dredging in 1901." He gave an account of a two days' dredging expedition carried out last July off the Northumbrian coast, and showed microscopic mountings of several of the most interesting captures. His paper will shortly appear in the Transactions. Some well preserved specimens of the Lepidoptera larvæ to be met with in March were exhibited by Mr. D. Rosie.

Birds of Ravenglass.

Apart from the meetings of the Club in 1890 and 1891, I visited the most interesting colony of birds nesting at Ravenglass. The birds and their eggs are most carefully protected by Lord Mancaster, and can only be seen by visitors at appointed times, and a reliable gamekeeper is always present to prevent the shooting of birds or the taking of eggs.

The notes I made on my visits I think may be of some interest. They are founded partly upon my own observations, and partly on information supplied by the gamekeeper :—

Ringed Plover.—These birds are not very numerous, probably a dozen pairs. Nesting commences about the latter half of May. Four eggs are laid in a depression of the sand.

Sheldrake.—Very numerous. Nesting in rabbit burrows commences early in May. I saw young birds on the water during the first days of June.

Common Redshank.—On May 18th I saw three or four pairs of birds, and was informed the young from two nests had been seen a few days before. During twelve years the keeper had only seen two nests with eggs.

Black-headed Gull (2nd and 4th June, 1900).—This is a very numerous colony, the nests being placed entirely on sandhills. I found fresh eggs, incubated eggs, eggs chipped, young birds just hatched, birds beginning to run, birds running, birds strong on their legs, and one bird able to fly a little. The recently hatched birds trusted more to hiding themselves than to running. The visit was too late to see the eggs and nestlings in perfection. The young birds seem quite as pugnacious as afraid.

(May 18th, 1901).—Birds very numerous. Estimated by keeper to be about eighty thousand pairs. He stated that these birds had increased from about twenty thousand pairs during the last twelve years. Eggs hatched, partly hatched, and highly incubated. Before the down is dry young birds attempt to hide themselves, and on being handled or touched with a stick show pugnacity rather than fear, or probably both blended. Indigestable portion of the food of the mature bird ejected in pellets. Young fed by parent birds as from the crop of a pigeon. All birds leave this district when the young are sufficiently strong on the wing. On arrival in the spring all have their black heads. Saw one nestling in down, head and a streak about the breadth of the head straight down the back the usual brown colour, the whole of the other down pure white. The keeper who has been amongst these birds for the last twelve years never saw a similar colouration. Some birds swooped very closely to our heads, evidently meditating an attack.

Lapwing (May 18th).—Saw many birds, found one nest with four eggs, which, from their warmth, were partly incubated. This may have been a second nest, as the eggs are gathered for table use.

Stock-Dove.—This bird nests near the Bungalow at Drigg in rabbit holes. I am told it is not at all uncommon.

Sandwich Tern.—The nesting birds number over 120 pairs. There were about a dozen pairs of birds nesting on the estuary twelve years ago. The eggs are laid about the middle of May, generally in a mere scratching in the sand. Some few nests were composed of rushes or straws, and though we saw none, we were told Black-headed Gulls' nests were sometimes used. The eggs in each nest numbered one, two, and in two cases three, but in some instances no doubt the full number had not been laid. Some eggs had been destroyed, but it was questionable whether this had been done by the Black-headed Gulls or other birds.

In the keeper's notes the earliest arrival he is able to record of the birds is the 29th of March, and the first egg on the 6th of May.

The nests are in four different places on the tops of the sandhills. The difference in the down of the young birds was very striking, some very dark, others very light. We did not here see so fine a variety of eggs as are to be found on the Farne Islands. This Tern nests earlier than the Common and Little Tern.

Little Tern.—These are beautiful graceful little birds, and quite different in appearance and in their cry to any of the other Terns. Jackdaws and Hedgehogs appear to destroy a good many eggs. The nests are mere scratchings in the sand, and the presence of vegetation, shells, or pebbles is no doubt a mere accidental occurrence. This bird nests about a fortnight earlier than the Common Tern. This does not appear to be an increasing species. The keeper reports these birds arrive slightly earlier than the Common Tern, whose arrival he records about the first week in May.

Common Tern.—These birds arrive later than the Sandwich and Little Terns. I found them very numerous, and saw hundreds of nests the third week in June. Most contained two eggs, about one in five had three eggs, and one nest four. The keeper informed me the eggs in a small proportion were fresh, slightly incubated in a great many, and in a few considerably incubated. None were hatched. Many nests were mere scratchings in the sand or moss, but some were substantial structures of dried bents or straws. The birds arrive about the first week in May.

Roseate Tern.—I saw none of these birds, but the keeper informed me a naturalist a few years before had been over the ground with him and saw eggs he believed to be those of this bird. They were identified by snaring the bird, which was allowed to go, and no doubt the eggs were hatched.

Terns generally.—The keeper's observations are the incubation in the same nest varies considerably, and that the eggs are generally sat as soon as laid, and that two or three days, possibly four days elapsed between the laying of each egg. In some cases incubation does not take place until all the eggs are deposited.

Oyster Catcher.—Very numerous. Nesting commences about the middle of May.

Kittiwake.—On May 18th we saw some of these birds. So soon as the Black-headed Gulls leave they arrive on the sand-dunes in considerable numbers.

Dotterel.—This ought not to come under a heading for the Birds of Ravenglass, as its nesting place is only to be found at a great elevation, but on my visit in 1900 I was reliably informed that three or four years before three eggs had been found on a mountain near Drigg, but unfortunately these were destroyed by the farmers' children. I could not ascertain that the bird had subsequently been found nesting. I am afraid this is a fast disappearing nesting bird.

Obituary.

It is now my melancholy duty to record the great loss the Club has suffered during the year in the death of two of our oldest and most highly respected members, Mr. Richard Howse, M.A., and Mr. John Forster Spence, a past President of the Club :—

Mr. Richard Howse, M.A.

Mr. Howse was one of the original members of the Club, and at the time of his death was the last of those who attended its first Field Meeting at Whittle Dene, May 20th, 1846. He died on March 14th, 1901, aged 80 years. He was a native of Oxfordshire, and from his earliest years had devoted his attention to the study of natural history in its various branches. He gave special attention to geology, and formed a collection of the fossils of his native place Thame. He came to the North as a very young man, and I believe for some time lived in Gateshead, removing later to South Shields. While here he devoted himself very closely to the study of the Permian rocks, on which he became an authority, and the results of his studies he embodied in his Catalogue of the Fossils of the Permian System, and also in his notes on that system. He also investigated the evidences of glaciation on the rocks in the neighbourhood, the results of which he published in a paper in the Transactions of the Mining Institute.

He was fortunate in coming to this neighbourhood at a time when the naturalists of the district were represented by such men as Joshua Alder, Albany and John Hancock, George Wailes, William Hutton, George C. Atkinson, R. B. Bowman, and others. With these well known naturalists Mr. Howse worked, and later he was associated in the same pursuits with Thomas Atthey, George Hodge, Canon Norman, Dr. Embleton, Henry and George Brady, and William Dinning.

At the annual meeting of the Tyneside Naturalists' Field Club, February 19th 1847, he was elected a member of the

Committee, and from that time until his death was closely connected with the Club, and for a long period was one of the secretaries and editor of the Transactions.

He was Honorary Curator of the Museum for a long period, and when alterations were made in 1863 he assisted in the re-arrangement of the collections. From that time he did good work at the collections. On the completion of the new building at Barras Bridge he was appointed permanent curator, devoting his entire time to the duties. He was a constant and large contributor to the Transactions; and in the departments of Natural History which he made his own his work is that of an authority.

Mr. John Forster Spence

died on July 22nd, 1901, at the ripe age of 82. He had been a member of the Club for more than 50 years, and ever took a warm interest in its affairs. He was long a member of the Committee, and in 1894 was president. Though devoting himself to no special branch of Natural History, yet the pleasure and delight he took in the general subject, and the enjoyment he obtained from it is well seen in the concluding portion of his presidential address, and the enthusiasm which animated him is well worthy of imitation. Yet though Mr. Spence did not devote himself to any special branch of Natural History, few men were so prominently before their fellows, and every good enterprise found in him an ardent helper. The Life Brigade, of which I believe he was the founder, and the accommodation provided for the lifeboats and their crews will ever be monuments to his memory. The scene on that July afternoon when the lifeboat crews, whom he had so often led and cheered in times of danger, yoked themselves to the hearse, and dragged his remains to their last resting place at Preston Cemetery, will not be soon forgotten. The immense crowd of Life Brigade men and admiring friends from far and near who gathered round his grave fully endorsed the words on his memorial card :—

"Write me as one that loves his fellow men."

Ornithological.

One of the most interesting occurrences of the year has been the addition of Baer's Pochard *(Nyroca baeri)* to the list of British birds.

At the meeting of the British Ornithologists' Club held on November 20th, 1901, the Hon. N. Charles Rothschild exhibited a specimen of this Asiatic duck which had been shot on the Tring Reservoirs, Hertfordshire, on November 5th, 1901. This duck had never before been obtained in the British Islands, and the only question was whether Mr. Rothschild's specimen was a truly wild bird or an escape. The specimen had no appearance of having been in captivity, and Mr. Rothschild had satisfied himself that it had not escaped from the Zoological Gardens, where there are four pinioned birds of this species. The Duke of Bedford and Mr. J. G. Millais, in reply to enquiries, stated that they were not aware of any of these birds having been turned out on artificial waters in this country, so that the evidence so far points to the fact that Mr. Rothschild's specimen is a truly wild bird, which doubtless lost its way and wandered to this country in the same way that other Asiatic birds have done, *e.g.*, MacQueen's Bustard and Radde's Bush Warbler.

It is also a matter of interest to record the laying of an egg by the Condor in the grounds of the Museum on the 10th of April last. This bird was taken in the Andes of Chili, South America, 16 years ago, and was presented to the Museum as a nestling by Dr. H. S. Pattinson and Mr. W. C. Tripler. Mr. Wright gives me the size of the egg as $4\frac{1}{2}$ by $2\frac{1}{2}$ inches. It is a pure white without markings. Its surface is very rough, and the shell light and thin. I am unacquainted with the eggs of this bird, though most of Vultures are well known to me. I should have expected a broader egg with a smoother surface, and a much heavier shell. Without more information I should be slow in accepting this egg as a typical example. In its wild state I believe the bird frequently has two eggs, and that it is almost a year before the young birds leave the nest.

I regret the growing scarcity of many of our birds, and I think some simple measures could readily be devised for their protection. The growing scarcity is no doubt in some instances brought about by increase of population and drainage of marshy lands. Deliberate and unnecessary destruction however is most to blame. As a slight set off against this it must be gratifying to all lovers of our larger and most picturesque birds of prey to know that the Golden Eagle is not only holding its own, but is increasing in numbers in the fastnesses of Scotland. I scarcely think intentional protection can take much credit for this, but that it is rather the advantages conferred upon the deerstalker by the destruction of the blue hare, which, to a large extent, provides food for the birds. The White-tailed Eagle, whose nesting place is generally more inaccessible than the eyrie of the Golden Eagle, has almost disappeared, though a quarter of a century ago it was by far the more numerous bird. In a recent visit I paid to Shetland I made most careful enquiries as to whether any nesting birds were to be found there in the season, but I could in no case obtain any reliable assurance of any young birds being hatched that year. There may have been some, but I am quite satisfied that in the whole of these Islands, if any birds other than accidental visitors exist, there are not more than three or four eyries.

In Orkney I found the once numerous Hen-harrier and Short-eared Owl being destroyed as quickly as possible by the gamekeepers. Over the whole of our Islands everything possible is being done by gamekeepers to destroy such birds as the Peregrine Falcon, the Raven, the Hooded and Carrion Crows, the Merlin, the Kestrel, the Sparrow Hawk, the Magpie and Jay. Even war is waged against the almost entirely innocent Owls. This in some cases is done intentionally by the gamekeeper with or without instructions from his employer, but in many cases the birds are taken in pole-traps erected for such birds as Sparrow Hawks. This wilful destruction is in some cases carried out by the express orders of the owner or tenant of shootings, but in some cases

it is done by the gamekeeper simply in the belief that it is part of his duty, and his employer as a rule knows so little of bird life other than that which is expected to fall before his gun, or is so indifferent to the preservation of anything other than game birds, that he never troubles to interest himself in the subject either one way or the other.

If more effectual protection is not afforded to these and other birds the country to all lovers of nature will lose one of its greatest charms.

Apart from gamekeepers there are other delinquents of an even worse character—an excursion steamer used to run from Sunderland to the Farne Islands, and the enjoyment of the passengers consisted in blowing the young Guillemots and Kittiwakes wholesale from the Pinnacles into the sea, the only motive actuating these people being the desire to kill something. I have stood on the Flamborough cliffs in the nesting time and seen a pinnace with her name covered slowly pass over the sea at the foot of the cliffs. On her deck were about half-a-dozen men shooting down the nesting birds as fast as their guns could be loaded and discharged. The craft never once stopped to secure a specimen. They were left floating on the sea, many of them to die a painful and lingering death. A few years ago the Kittiwake was almost entirely destroyed on the Flamborough cliffs, the skins being required by milliners. I regret to learn that the revival of a similar fashion has during my year of office resulted in the making of one contract by a Bridlington man for the supply of no less than 10,000 birds to a London firm.

As a lawyer, and one deeply interested in ornithological pursuits from a very early age, it was my intention to make some observations on the various Acts of Parliament passed for the protection of our wild birds and their eggs, but on looking into these Acts and the various orders in Council made under them I find the subject could not be fully dealt with within the limits of this address. There are no less than 57 Statutes dealing with game and wild birds, commencing 13 Rich. II., St. 1, c. 13, and ending with 59 and 60 Vic., c. 56

(Wild Birds Protection Act), 1896. I will simply deal shortly with the Wild Birds Protection Acts between 1880 and the present time, together with the orders of Council which have been made in pursuance of such Acts on the application of County Councils and similar bodies.

The Acts themselves are by no means easy to understand. The orders made under them have led to considerable complexity, and it is not easy to ascertain what is the state of the law in a particular county as to a particular bird. In some cases the birds are protected in one part of the county and not in another part of the same county. The local names of birds are largely used in the orders, and in many cases the same bird is referred to under two or three different names, and a local name refers to different birds in different localities. There is no one in remote districts to give effect to the Acts, for it can scarcely be expected that a policeman is an ornithologist to be found when the work of destruction is being carried on.

The following is a rough sketch of protection which I think would very much more effectually accomplish its purpose :—

Protect all the year round every British nesting bird, its eggs, and young.

The term "British nesting bird" to be interpreted from time to time by a competent authority.

I should then make the following exceptions :—

(*a*). Orders in Council to be made from time to time for the destruction in specified localities of birds becoming too numerous, but this would be necessary in few if any cases. Such an order, however, only to be made after a competent authority had expressed its opinion that such an order was necessary.

(*b*). During the shooting season all such defined birds as now fairly fall to the sportsman's gun.

(*c*). Birds and their eggs required as specimens either for museums or private collections.

I certainly would not deprive the private collector of a reasonable number of specimens for his museum or cabinets,

as I think it is entirely erroneous to believe that the study of any branch of natural history can be successfully pursued without specimens. Apart from this, consider for a moment how many of the treasures of the public collections in this country would have been in existence without the aid of the private collector. On the other hand I would allow no man a free hand in the taking of specimens of either birds or eggs, and possibly regulations might be applied in the case of our British ferns, Orchids, and other rare plants. I should first of all require him to take out an annual certificate for which he should pay a duty of, say, 10s. or £1. I would only allow such certificate to be granted upon a declaration that the taking of specimens was for a collector's private museum or a public museum, and not for either sale or exchange, and I should further require him to declare that at the end of each year he would furnish a complete list of all specimens taken, and would pay upon these a duty. This duty could from time to time be fixed so as not to unduly prevent the taking of specimens, but in the case of rarer birds it could be made so high as to become absolutely prohibitive. A false declaration I should visit with most severe penalties, and one breach of the conditions of a license should debar the holder of it from ever holding another. This scheme is only broadly sketched, and would have to be no doubt enlarged and modified in many ways, but I think carefully worked out it would produce satisfactory results.

Transactions.

During the year I was fortunate in being able to complete my "Transactions" of the Natural History Society and your Club. I have read much of these volumes, and the whole of the other matter I have somewhat hurriedly gone through. I have been struck with the immense store of valuable matter contained in these "Transactions," but unfortunately it is not accessable to most of us who have but a limited time in consequence of the want of a comprehensive index. I would

suggest that with the conclusion of the present year a break should be made in these "Transactions" and an index volume added. A new series might then be commenced.

Conclusion.

I am afraid I may have wearied you with a somewhat lengthy address. It therefore now behoves me to bring it to a close. I cannot however do this without first thanking you for the support you have given me and the kindly consideration and indulgence you have shown me during a pleasant year in office. My thanks are specially due to your honorary secretaries, upon whom the principal part of the work of your Club falls, to Mr. Potts, of Sunderland, to Professor Meek, to Mr. Gill, the Curator of the Museum, and to Mr. Joseph Wright, the respected custodian of that institution. The objects and pursuits of the Field Club will always be a subject of the greatest interest to me, and anything in the future which will advance the study of natural history will have my warm support.

The following were elected members of the Club during the year 1901–1902 :—

Carr, T. Guthrie.....	Oaklands, Benton.
Milburn, C. J.....	Stannerbrae, Ovingham.
Potts, Ed.	18, Tavistock Place, Sunderland.
Robson, Wm. H.....	25, Lawton Street, Newcastle.
Winter, Cathrine I.....	Elysium Place, Bensham, Gateshead-on-Tyne.

FIELD MEETINGS, 1902.

May 28th	Castle Eden Dene.
June 19th	Northumberland Lakes.
July 18th	Holy Island.
August 11th.....	Allendale.
September 17th	Hepple.
October 7th.....	Bothal.

The following gentlemen were proposed and elected as Officers of the Club for 1902–1903:—

President.

William Mark Pybus.

Vice-Presidents.

Rev. W. Johnston.
Councillor G. Harkus.
R. Y. Green.

Ex-officio Vice-Presidents.

Thomas Thompson.
Rev. J. M. Hick.
E. J. J. Browell.
Rev. A. Watts, F.G.S.
Rev. Canon Tristram, F.R.S.
Sir G. H. Philipson, M.D.
Rev. Canon Norman, F.R.S.

Hon. Treasurer.

C. E. Robson.

Hon. Secretaries.

Richard Adamson.
Rev. W. McLean Brown.

Committee.

T. W. Backhouse.
Thomas Belt.
G. S. Brady, M.D., F.R.S.
Isaac Clark.
Joseph Cobb.
D. Carmichael, M.D.
J. Milburne.
Ed. Potts.
R. M. Tate.
J. M. Ufford.
J. D. Walker.

Auditors.

J. S. Forster.
Arthur Tranah.

CASH ACCOUNT OF THE TYNESIDE NATURALISTS' FIELD CLUB

FOR THE YEAR ENDING 31ST DECEMBER, 1901.

1901.			£	s.	d.
Jan. 1.	To	Balance forward	45	8	8
,, 17.	,,	Subscriptions paid direct... £0 5 0			
,, 17.	,,	,, ,, ... 0 5 0			
Mar. 11.	,,	,, ,, ... 0 5 0			
June 4.	,,	,, ,, ... 0 5 0			
			1	0	0
Mar. 11.	,,	Charities Central Collecting Agency Subscriptions ... 0 15 0			
	,,	Less Charges ... 0 0 2			
			0	14	10
	,,	Hindmarsh and Heppell—Subscriptions ... 32 15 0			
	,,	Less Commission, Postage, etc. ... 2 6 0			
			30	9	0
June 4,	,,	J. Wright—Cash for Transactions taken for Prize Essay	5	0	0
Nov. 23.	,,	Natural History Society—Cash on Account	40	0	0
			122	12	6
1902.					
Jan. 2.	,,	Balance in Barclay & Co.'s Bank	£30	15	9

1901.		£	s.	d.
Oct. 30.	By Geo. West & Sons—Lithography and Printing Plates Transactions, Vol. XIV.	8	5	0
,, 30.	,, Hon. Secretaries' Expenses for year ...	8	10	1
Dec. 12.	,, J. Bell & Co.—Printing Transactions, Vol. XIII.	63	1	9
,, 16.	,, "Newcastle Journal," Printing Addresses and Posting Circulars...	11	9	11
,, 31.	,, Postage Stamps	0	10	0
	,, Balance	30	15	9
		£122	12	6

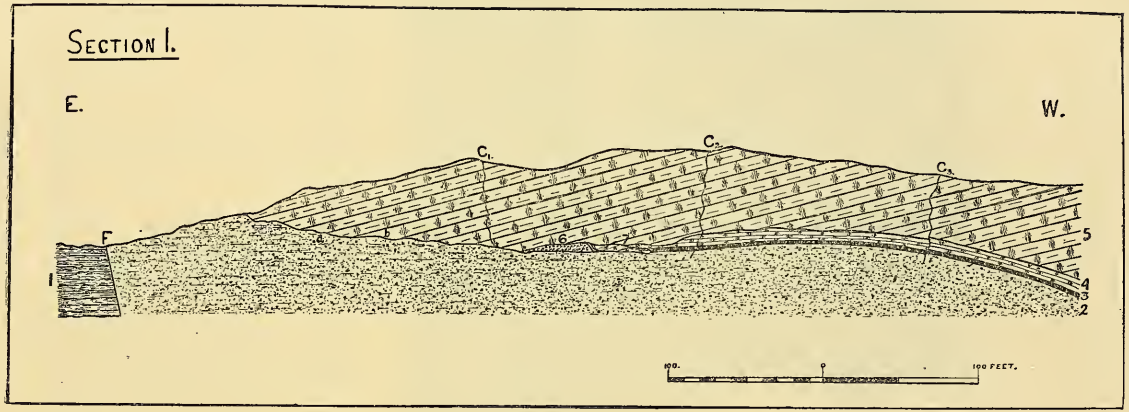
C. E. ROBSON,
HON. TREASURER.

April 24th, 1902.—Examined and found correct,
A. TRANAH, HON. AUDITOR.

1.—Photograph of Claxheugh Rock, looking east, showing in ascending order

1. Yellow Sands.
2. Marl Slate.
3. Compact Limestone.
4. Shell Limestone.

The two middle members are absent towards the east of the section,



Section 1.

Section of Claxheugh Rock.

1. Coal Measures 2. Yellow Sands. 3. Marl Slate.

4. Compact, regularly-bedded Magnesian Limestone.

5. Shell Limestone, unbedded. Middle Magnesian Limestone.

6 and 7. Broken masses of Limestone and breccia, the details of which are given in Section II.

b. Piece of Compact Limestone. a. Puckerings in Yellow Sands. F. Fault. C1, C2, C3, Cracks.

An Explanation of the Claxheugh Section, Co. Durham. By D. Woolacott, M.Sc., F.G.S.

INTRODUCTION.

Claxheugh Rock is a cliff about one hundred feet high and 250 yards long, lying on the southern bank of the river Wear, about two miles west of Sunderland. It is composed entirely of Permian strata, except at the eastern end of the section, where a north and south fault throwing about 100 feet west brings the Upper Coal Measures and Permian into juxtaposition. The base of the entire Permian part of the section is formed by the Yellow Sands, which are succeeded at the western end of the section by the Marl Slate, a compact, regularly-bedded Magnesian Limestone (Lower Magnesian Limestone, Howse), and a fossiliferous, unbedded, crystalline limestone (Shell Limestone, Middle Magnesian Limestone, Howse). The thicknesses exposed of these strata are :—

Middle Limestone .....40 feet.
Lower Limestone.....10 „
Marl Slate ..... 2 „
Yellow Sands .....60 „

At the eastern end of the section the Marl Slate and Lower Limestone are absent, and the Middle Limestone rests in a very irregular manner on the Yellow Sands. The nature of the entire section is shown in Section I. and the accompanying photograph. Some authors have supposed this to be a case of the thinning out of these two middle beds, but the manner in which the beds terminate, and other evidence to be afterwards noticed, controverts this view. Other authors have conjectured that the Marl Slate and regularly-bedded Magnesian Limestone were denuded before the deposition of the Shell Limestone upon them, but the facts brought forward in this paper prove this not to be so. It appears to be specially important that an explanation of this section should be given, as Claxheugh is one of the few places where the four members of the Permian there exposed can be seen in succession.

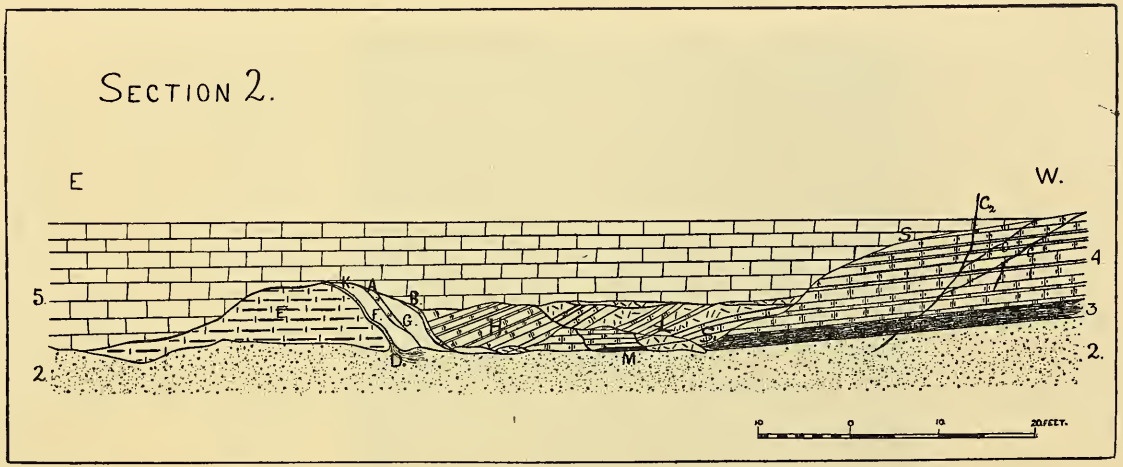
LITERATURE.

The section has been noticed by various authors. Sedgwick, in his classical paper on the "Internal Structure of the Magnesian Limestone," mentions it and gives a section of it (1). Howse, in "Notes on the Permian System of Northumberland and Durham," says, of the Shell Limestone, "When seen in section it generally rests on the Compact Limestone, but at Clack's Heugh it rests on a bed of friable sandstone" (2); and, again, in a "Catalogue of the Fossils of the Permian System," he writes, "In a few localities as at Clack's Heugh on the Wear, the Marl Slate is entirely absent. and the lowest bed of limestone, which is seen in one part of the section resting on the sandstone is very thin and earthly"(3). Kirkby also refers to it in a paper on "Fossils of the Marl Slate and Lower Magnesian Limestone"(4). Professors King and Lebour also notice the section. The latter geologist in his "Geology of Northumberland and Durham," gives a section showing the junction between the Yellow Sands and overlying rocks as seen at Claxheugh in 1884 (5), and says, "Were it not for the interesting group of organic remains found in the Marl Slate, it would no doubt be properly regarded as merely a subordinate member of the limestone, although occasionally there are distinct lines of unconformity between the two. This is notably the case at Claxheugh, where a splendid section is exposed on the south bank of the Wear about two miles above Sunderland. Clear as the fact is that here, the Marl Slate was disturbed and denuded before the deposition of the Magnesian Limestone on it, the unconformity is probably only a local one with no general significance" (6).

DESCRIPTION OF SECTION.

The manner in which the Marl Slate and Compact Limestone terminate is shown in Section I. It will be seen that these two beds are present at the western end but absent from the eastern, and the manner in which they end is complicated and peculiar. This can perhaps be only properly realised by

2.—Photograph of disturbed masses or Compact Limestone and breccia, of which a detailed section is given in Section 2.



Section II.

DETAILED SECTION OF THE TERMINATION OF THE MARL SLATE AND LOWER LIMESTONE, with the accompanying disturbed and brecciated masses.

2. Yellow Sands. 3. Marl Slate. 4. Compact, regularly-bedded Magnesian Limestone.
5. Shell Limestone. C_2. Crack (see C_2, Section I.) SS1. Line of fracture.
M. Portion of Marl Slate in situ. H & L. Disturbed and more or less cracked and broken masses of Compact Limestone. A & B. Layers of Compact Limestone.
F. & G. Powdered masses of Limestone. D. Banding in Yellow Sands.
DK. Layer of Yellow Sands, thrust up over top of breccia E. E. Mass of Breccia.

a visit to the actual exposure, but it is hoped that the sections and accompanying photographs portray as far as possible the real nature of the section. Instead of the two divisions ending gradually as in a case of the dying out of strata, or abruptly as might have been possible if the beds had been disturbed before the upper beds were deposited upon them, they are followed eastwards by about forty feet of broken masses of Compact Limestone, then by a mass of breccia of about similar length (6 and 7, Section I). The details of this portion of the exposure are shown in Section II. and photographs (2 and 3). The latter section shows that the layers of the Compact Limestone and Marl Slate are sharply cut off by a crack S S1, and that there has been a settling down of the Shell Limestone. Lying in between the Yellow Sands and this limestone are some large masses of Compact Limestone (H and L), while at one part a small portion (M) of the Marl Slate rests apparently in situ. Two very much bent layers A and B of Compact Limestone are specially worthy of notice, squeezed in as they are between the Yellow Sands and overlying limestone, while at F and G is a finely powdered mass of limestone now very hard and compact. At D the Yellow Sands are very much banded, and bear evidence of having been at one time subjected to great pressure, and very curiously a portion of these sands appears to have been forced from D along K F right up over the breccia E. This breccia consists of broken fragments of limestone, both Compact and Shell, cemented together.

A noteworthy feature is the large number of cracks which occur in the section. C 2 in the second section has several smaller ones running from it, all of which are associated with very slight dislocations in the limestone. C 2 in both sections are the same, and it will be seen on referring to the first section that there are three large cracks running from top to bottom of the whole mass of the Shell Limestone. Two of these C 2 and C 3 cut through the Compact Limestone and Marl Slate, but die out in the Yellow Sands beneath. The latter of these is virtually a small fault throwing a few feet to the east.

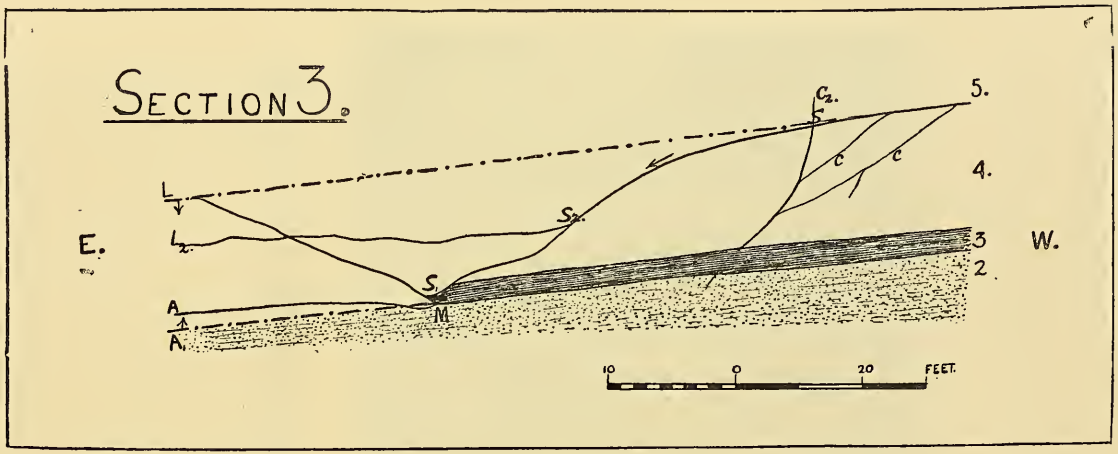
Another important point is that pieces of Compact Limestone, not in situ, and to the east of the termination of this bed, occur lying between the Shell Limestone and the Yellow Sands (b in Section I.). The junction of these Sands with the overlying limestone is very irregular all the way from the ending of the divisions, and the surface of the Sands has evidently been much disturbed and denuded.

EXPLANATION.

The details of this section can be entirely explained by supposing denudation to have gone on in a cavern the roof of which afterwards settled down, thus bringing the Shell Limestone in contact with the Yellow Sands, with the exception of the places where the breccia intervenes. It appears as if denudation had gone on in a cavern until nearly the whole thickness of the Compact Limestone and Marl Slate lying to the east had been removed, and the top of the Yellow Sands a little denuded, its upper surface being thus rendered very irregular. The western end of the cavern probably, before the settling down of the upper strata, presented somewhat the appearance shown in Section 3.

The roof of the cavern after a time gradually settled down, and a slight sliding movement along the crack S S1 possibly took place. During this movement in order to relieve the strain the large cracks C 1, C 2, C 3 with their associated smaller ones were formed. The broken masses and layers of limestone lying on the floor of the cavern were pressed along it eastwards, the two layers A and B being wedged in between the floor and the roof, and some of the limestone was ground to powder and filled F and G, Section II. This powdered mass is now firmly cemented together and is very tough and hard. The banding of the Yellow Sands at D, and the forcing of some of it over the brecciated mass was due to this eastward movement; while the breccia is evidently the loose portions of limestone that were lying on the floor of the cavern, and further to the east (b in Section I.) portions of the limestone lying on the floor of the cavern would be enclosed between the Yellow Sands and overlying limestone.

3.—Photograph of termination of Marl Slate and Compact Limestone, at point S1 in Section 2.



Section III.

IDEAL SECTION OF WESTERN END OF CAVERN.

2. Yellow Sands. 3. Marl Slate. 4. Regularly-bedded Compact Limestone. 5. Shell Limestone.

S L. Line of separation between Compact Limestone and Shell Limestone.

S2 L2. Present line of separation as in Section II.

M A1. Line of separation between Yellow Sands and Marl Slate.

M A. Present line of ditto.

S S1. Line of present termination of Marl Slate and Compact Limestone.

C2. Major crack. C C. Minor cracks.

While this was taking place some earth creep probably took place at the eastern end, the denuded top of the Yellow Sands rising to meet the down-coming limestone. Some peculiar puckerings in the Yellow Sands at a (Section I.) are probably to be accounted for in this way.

It is perhaps worthy of note that no rounding of the pieces of limestone is observable.

REFERENCES.

1. Transactions of the Geological Society of London, 2nd Series, Vol. III., 1835, Page 71 and 73, and Plate 7, Fig. I.

2. Transactions of the Tyneside Naturalists' Field Club, Vol. III., 1854–8, Page 237.

3. Ibid, Vol. I., Plate I., 1848, Page 223.

4. Natural History Transactions of Northumberland and Durham, 1865–7, Vol. I., Page 197.

5. Geology of Northumberland and Durham, Plate 3, Fig. I.

6. Ibid, Page 36.

NATURAL HISTORY SOCIETY

OF

NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE.

REPORT OF THE COMMITTEE FOR 1901–1902.

The Committee are glad to report a slight increase in the number of members of the Society, the year having closed with a membership of 231 as against 225 for last year. Two members, Alderman T. B. Winter and Mr. Thos. Deacon, have died, and seven members have resigned, while fifteen new members have been elected.

With regard to the Treasurer's account, the Committee wish to state that the balance in hand (£160) is more apparent than real, as practically the whole of this sum is bespoken for publication of Transactions, and for cases and other work now in progress in the Museum building.

Your Committee wish to express their deep regret that the fact of the continued ill-health of the Treasurer, Mr. Thomas Thompson, has rendered it necessary for him to place his resignation in the hands of the Society. Mr. Thompson has been Hon. Treasurer to the Society for ten years, and the Committee feel that the Society are under a deep debt of gratitude to him for the very cautious and prudent method in which the finances of the Society have been administered during that period.

The Committee have during the past year received six months' notice from the Tyneside Naturalists' Field Club of their wish to terminate the arrangement with the Society which was made in the year 1864. Your Committee much regret that the Field Club have found it necessary to sever the close connection which has existed for so long between the two Societies. The parts of the Joint Transactions of

the two Societies which are at present incomplete will have to be completed before the joint arrangement can absolutely terminate, and after that period our Society will have to undertake the publication of its own Transactions.

The want of a systematic index to the Joint Transactions has been pointed out, and the Committee would be glad if any members who are willing to assist in the work of indexing will communicate with the Curator.

Application has been made to the Committee to allow the Memorial Statue of Lord Armstrong (for which the designs were recently exhibited in the Museum building, and which will be of a very handsome and decorative nature) to be erected at the southernmost extremity of the Museum grounds. The site required would occupy the southernmost piece of ground up to where the pillar of ironstone stands at present.

Having regard to the very intimate connection which for so many years existed between Lord Armstrong and the Society, the Committee feel the site selected to be a most appropriate one, and are sure that the resolution (which will be moved at the Annual Meeting) authorising the erection of the statue of their late President on the site in question will meet with the unanimous approval of the members.

A fine photogravure of Lord Armstrong has now been added to the portraits in the Committee Room, and an enlargement by Mr. Auty of his photograph of the Society's late Curator (Mr. Richard Howse) has also been placed on the walls of that room.

It may be mentioned that Professor Lebour very kindly went through Mr. Howse's collection of fossils, many of which were of a unique character, and the Society have purchased those which Professor Lebour recommended.

The Hancock Essay Prize has been awarded to Mr. James Caygill, and the competition is again open for this year. Your Committee cannot help expressing their regret that so few essays are sent in for this competition, which is open to any resident in the counties of Northumberland, Durham, and Newcastle-upon-Tyne, and as the conditions of the com-

petition are such as to place it within the reach of any person who takes an intelligent interest in the common objects of the country, they will be glad if the members of the Society can use their influence to make the nature and scope of the competition more widely known.

During the past year your Committee have received a very important proposal from the Durham College of Science, who enquired whether the Society would be willing to allow the erection in the Museum grounds of a block of laboratories for the teaching of Natural Science in connection with the Museum, in which case the College would be prepared to find the money for their erection, and to provide the staff. The teaching would be conducted under the direction of a Joint Committee of the College and the Natural History Society, and the Natural History Society would have a representative on the Council of the College.

The preliminary details of this matter have been very carefully considered by your Committee in conjunction with a Sub-Committee from the Durham College of Science. Having regard to the fact that the want of systematic teaching in connection with the Museum has been for many years keenly felt, and that there does not appear to be any probability of the Society itself having sufficient funds to enable it to do more than preserve and enlarge the collections in its charge, your Committee felt that the scheme was one which deserved the most favourable consideration of the Society, and they accordingly intimated the same to the Council of the College with a request that the College would furnish them with a detailed plan showing the nature and proposed site of the buildings which they would consider necessary for the purposes in question, but up to the present no further details have been received. Your Committee suggest that as soon as a definite scheme has been received from the College a special general meeting of the members of the Society be called, at which the matter can be fully discussed.

A petition has been received signed by local residents and many members of the Society protesting against the erection

of any building on the land to the east of the Museum. Your Committee suggest that this petition be held over until the matter can be dealt with as a whole.

The Evening Meetings held during the winter months in conjunction with the Tyneside Naturalists' Field Club have not as a rule been well attended, though the proceedings were often of great interest. The meetings were devoted to the following papers and addresses :—

October 22nd.—Rev. Arthur Watts, F.G.S., on "Some New Sinkings at Derwenthaugh."

November 19th.—Rev. W. J. Wingate, "Life on a Window Pane"—a sketch of the British Diptera.

December 10th.—Rev. R. Stewart Wright, on "The Amambwe Tribe of Lake Tanganyika," illustrated by the series of native implements and manufactures, presented to the Museum by the lecturer himself.

The Rev. J. M. Hick exhibited cases containing tropical Butterflies, selected as examples of protective mimicry.

January 21st.—D. Woolacott, M.Sc., "Some Notes on the Permian Rocks."

February 18th.—Col. Adamson, "Notes on the Burmese Butterflies," illustrated by specimens from his own collection, and referring especially to instances of seasonal dimorphism and mimicry.

March 18th.—Extracts from the Hancock Prize Essay, by Jas. Caygill; Prof. G. S. Brady, M.D., F.R.S., "Report on Dredging and Marine Research in 1901."

A Short Museum Guide, sold at one penny, has been prepared by the Curator, and was issued at Whitsuntide. Your Committee are pleased to state that the first batch of four hundred copies was sold during the following three months. The aim of this Short Guide is to provide a simple and

readable account of the contents of the various rooms, avoiding technicalities, and dwelling particularly on the sections in which the Museum collections are especially noteworthy.

A summary of the work done in the Museum during the past year is appended to this Report.

The full list of donations received during the year is appended, but special mention must be made of the following: The Rev. W. J. Wingate, of Bishop Auckland, has offered to the Society his large collection of local Diptera; he has arranged these in glass-topped boxes purposely for the Museum, and they will shortly be placed in the library. Mr. Wingate hopes that the help derived from easy reference to this collection will encourage some other local naturalists to take up the study of this much neglected group of insects. Dr. Geo. Abbott has presented specimens and photographs of Magnesian Limestone concretions, and has arranged a series in one of the petrology cases to illustrate his theory as to the relations of the different forms. A selection of objects from the collections of the late J. F. Spence, given by Miss Spence, includes a good set of the Cheviot rocks; and Mr. J. J. Oxley has given an interesting set of specimens illustrating the remarkable mineral wealth of Newfoundland. Mrs. Punshon, of Ingleby House, Northallerton, has presented the Society with two small portraits, handsomely framed—one a pencil drawing, by Edward Train, of John Hancock as a young man, the other an oil portrait of the late Rev. Geo. Cooper Abbs. A number of works on natural history bequeathed by the late Dr. Thos. Pigg, and including several of considerable value, have been added to the library; and a set of Burmese butterflies, amongst them examples of several rare species, have been presented by Col. Adamson. Mr. R. C. Clephan has given a most interesting set of diagrams illustrative of Egyptian archæology; these consist of accurate copies of inscriptions and frescoes, restorations of temples, &c., and form a valuable addition to the ethnology collection, but they have not yet been put on exhibition for lack of means for properly protecting them.

The following gentlemen have joined the Society during the year 1901–1902 :—

MEMBERS.

Jas. T. Cackett	133, Osborne Road.
Jno. Goethe East	5, St. George's Terrace.
Fredk. E. Forster	32, Grainger Street.
Ernest Scott	West Quarter, Hexham.
Rev. W. J. Wingate	St. Peter's Vicarage, Bishop Auckland.
W. H. Young	Higher Grade School, Gateshead
J. H. Barker	68, Jesmond Road.
Right Rev. the Lord Bishop of Durham.	
Major A. G. Hadcock	(1st Northd. Vol. Art.), Cossey House, Archbold Terrace, Jesmond.
Wm. Crump Beatley, M.D.	4, St. Mary's Terrace.
F. Winter, F.R.M.S.	12, Sanderson Road.
N. Hardcastle, M.R.C.S.	5, Sydenham Terrace.
Major Harvey Scott	Benwell.
Edward Hunter	Wentworth, Gosforth.
Lee Hudson	10, Kensington Terrace.

ASSOCIATE.

Jos. Bowman	c/o Messrs. Bainbridge & Co.

CURATOR'S REPORT ON MUSEUM WORK, 1901–1902.

On entering upon the office of the curatorship it was necessary at the outset to devote a considerable amount of time to the investigation of the contents of the Museum, as regarded both exhibited and store collections; and this led to an extensive overhauling of the store-room and some of the store-cupboards. In the course of this overhauling, the entire herbarium, and the important collection of marine invertebrates left by Albany Hancock and Joshua Alder, were worked through and put as far as possible into good condition.

The work done on the exhibited collections has been concerned chiefly with the ethnological and geological departments. The cases in the upper east corridor, containing the ethnology collections, have been emptied, cleaned, and painted, and their contents entirely re-arranged; this department only now requires better labelling to be considered in thoroughly satisfactory condition. The two cases devoted to botanical objects in the corner room at the south end of this corridor have also been completely overhauled. The work undertaken in the geology room is still in hand. The excellent series of local Permian fossils have been remounted, and are being carefully named and labelled from the standard monographs; and the general appearance of the desk-cases in this room has been greatly improved by the insertion of false bottoms, bringing up the objects to lie parallel with the glass. A beginning has also been made with a series of index cases, designed to give a clear summary of the ascertained history of life on the earth; it is hoped that this will prove of value as an introduction to the fuller collections.

The work of the Museum has been aided in a very practical manner by some of the honorary curators. Through the generosity of Mr. John Daglish temporary assistance has been obtained for the re-writing of the labels in the mineral collection; Mr. Samuel Graham has given much time to arranging the valuable collection of British birds' eggs presented by Mr. Raine; and Mr. Meek is examining and indentifying the animal remains of the Roman and prehistoric periods in the Museum.

E. Leonard Gill.

NATURAL HISTORY SOCIETY OF NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE.

OFFICERS, 1902–1903.

PRESIDENT.

W. A. Watson-Armstrong, Esq.

VICE-PRESIDENTS.

Viscount Ridley.
Sir Lowthian Bell, Bart, F.R.S.
Sir James Joicey, Bart., M.P.
Sir Arthur Middleton, Bart.
Sir Andrew Noble, Bart., F.R.S.
Sir G. H. Philipson, M.D., D.C.L.
Sir John Swinburne, Bart.
Sir Lindsay Wood, Bart.
The Mayor of Newcastle.
Prof. G. S. Brady, M.D., F.R.S.
E. J. J. Browell.
Norman Cookson.
Geo. E. Crawhall.
W. D. Cruddas, M.P.
Jno. Daglish.
R. R. Dees.
D. O. Drewett.
R. Y. Green.
Rev. Principal Gurney, D.C.L.
H. N. Middleton.
Jos. W. Swan.
Thos. Thompson.

COMMITTEE.

Lieut.-Col. C. H. E. Adamson, C.I.E.
W. E. Beck.
R. C. Clephan.
Samuel Graham.
Dr. Nicholas Hardcastle.
Alex. Meek, M.Sc.
C. W. Mitchell.
Prof. G. R. Murray, M.D.
Jno. Pattinson.
W. M. Pybus.
J. D. Scott.
J. D. Walker.

HON. SECRETARIES.

Prof. M. C. Potter, M.A. | N. H. Martin.

HON. TREASURER.

A. H. Dickinson.

HON. AUDITOR.

Samuel Graham.

THE HONORARY TREASURER IN ACCOUNT

DR. CURRENT ACCOUNT FROM JULY 1ST,

1901.	RECEIPTS.	£	s.	d.	£	s.	d.
July 1.	To Balance at Lambton & Co., Bankers				155	3	9
	,, Members' Subscriptions	243	10	6			
	,, Associates ,,	1	15	0			
	,, Museum Admission Fees	152	11	3			
					397	16	9
	,, Interest on Stock :—						
	Newcastle Corporation 3½ per cent. Stock (less Income Tax)	65	18	4			
	Wear Commissioners' 4½ per cent. Stock (less Income Tax)	21	4	8			
	Tyne Commissioners' Consolidated Fund at 4 per cent. (less Income Tax)	75	10	2			
					162	13	2
	,, Sale of Museum Guides	6	1	3			
	,, Donation from Jno. Daglish, Esq., for label writing	10	10	0			
	,, Donation from Oddfellows Friendly Society	15	0	0			
	,, Transfer from Fitting Account	22	9	3			
	,, ,, ,, Building Account	14	3	0			
					68	3	6
					£783	17	2

THOS. THOMPSON,
HON. TREASURER.

CAPITAL

1901.	RECEIPTS.	£	s.	d.
July 1.	To Sum Invested in Newcastle Irredeemable Stock at 3½ per cent., as per last Capital Account	2000	0	0
	,, Sum Invested in River Wear Commissioners Funded Debt at 4½ per cent., as per last Capital Account	500	0	0
	,, Sum Invested in Tyne Commissioners Consolidated Fund at 4 per cent., as per last Capital Account	2000	0	0
	,, Lambton & Co., Bankers, Newcastle	95	3	6
		£4593	3	6

THOS. THOMPSON,
HON. TREASURER.

WITH THE NATURAL HISTORY SOCIETY.

1901, TO JUNE 30TH, 1902. CR.

1902.	PAYMENTS.	£	s.	d.	£	s.	d.
June 30.	By Salaries and Wages				397	8	0
,,	Incidental Expenses :—						
	Coal	9	8	0			
	Coke	14	14	0			
	Gas	3	11	2			
	Water	3	12	10			
	Electric Lighting	4	7	11			
	Income and Land Taxes	10	15	4			
	Insurance Premiums	23	3	0			
	Repairs, Fittings, Stationery, Books, Postages, etc.	44	0	9			
					113	13	0
,,	Museums Association Subscription				1	1	0
,,	Tyneside Field Club on account (publication of Transactions)				40	0	0
,,	Purchase of Mr. Howse's Collections				25	0	0
,,	Expenses *re* Curatorship Appointment				2	6	10
,,	Portraits (the late Lord Armstrong and the late Richard Howse)				6	12	6
,,	Cheque Book				0	10	0
,,	Hewitson's Drawings of Butterflies, printing and binding				11	11	0
,,	Repair of Roadway				15	0	0
,,	Rewriting of Mineral Labels				10	10	0
,,	Balance carried forward as per Bank Book				160	4	10
					£783	17	2

Examined with the books and vouchers and found correct.

SAM. GRAHAM, HON. AUDITOR.

ACCOUNT.

1902.	PAYMENTS.	£	s.	d.
June 30.	By Newcastle Corporation Irredeemable Stock at 3½ per cent., as per Certificate No. 260	2000	0	0
,,	River Wear Commission Funded Debt, No. 967, at 4½ per cent.	500	0	0
,,	Tyne Commissioners Consolidated Fund at 4 per cent., Mortgage No. 5948	2000	0	0
,,	Lambton & Co., Bankers, Newcastle, Deposit Receipt, 36123	95	3	6
		£4595	3	6

Documents produced, and seen by

SAM. GRAHAM, HON. AUDITOR.

HONORARY CURATORS,

1902--1903.

ZOOLOGY.

VERTEBRATA.

Geo. E. Crawhall.
Samuel Graham.
Alex. Meek, M.Sc.
Thomas Thompson.

INVERTEBRATA.

Lieut.-Col. C. H. E. Adamson, C.I.E.
Rev. Canon Norman, F.R.S.
N. H. Martin, F.L.S., F.R.S.E.
Alex. Meek, M.Sc.

BOTANY.

J. Bidgood, B.Sc.
Rev. H. E. Fox.
Rev. Wm. Johnson.
Prof. M. C. Potter, M.A.
C. E. Stuart, B.Sc.

GEOLOGY AND MINERALOGY.

E. J. J. Browell.
John Daglish.
Prof. E. J. Garwood.
Rev. Principal Gurney, D.C.L.
Prof. G. A. Lebour, M.A.
John Pattinson.
Chas. O. Trechmann, Ph.D. F.G.S.

CURATOR OF MUSEUM.

E. Leonard Gill, B.Sc.

KEEPER OF MUSEUM BUILDING.

Joseph Wright.

DONATIONS TO THE MUSEUM

FOR THE YEAR ENDING JUNE 30TH, 1902.

DR. GEO. ABBOTT.—Magnesian Limestone concretions, Fulwell Quarry ; specimens and two albums of photographs.

LIEUT.-COL. C. H. E. ADAMSON, C.I.E.—Burmese Butterflies, about 100 specimens, including several rare species.

H. BILBOROUGH.—Nine Assamese Butterflies.

PROF. G. S. BRADY, M.D., F.R.S.—Fresh-water Algæ, specimens and drawings.

THOS. BRADY.—Nests of Mud-flies and group of shells of Pinna, from Pemba I., E. Africa.

G. P. BULMAN.—Eggs laid by a Spanish hen before and after pairing with a Bramah cock ; described in "Nature," June 27, 1901.

R. C. CLEPHAN.—Large diagrams (about forty) illustrating Egyptian archæology : consisting of copies of frescoes and inscriptions, restorations of temples, etc. Also an Egyptian parchment with inscription in debased Hebrew.

W. A. COWELL.—A remarkable variety of the Peewit with head, neck, greater part of wings, and all under-parts white ; shot at Newbiggin-by-the-Sea, April, 1900.

G. E. CRAWHALL.—A spider, *Lycosa allodroma*, from Haydon Bridge, August 19, 1901 ; eleven shells of *Limnea peregra*, var. *Burnetti*, from Loch Skene, Scotland, June, 1902.

THOS. DALTON (per E. Copland).—A branch of *Calamites*, 2-ft. 10-in. long ; Sheepwash, near Morpeth.

MISS EMBLETON.—Fossils, rocks, and minerals collected by the late Dr. Embleton.

J. GOODMAN.—Birds' eggs and exotic insects.

H. A. K. (per Messrs. Currie & Co.)—Fossils and minerals.

J. LAWRENCE.—Two eggs of Guillemot from Flamborough, of an uncommon variety.

MISS NESHAM.—Wigeon (male) and Grey Phalarope, Northumberland.

LADY NOBLE.—Head and horns of Indian Antelope, horns of same, and of young Kudu.

J. J. Oxley.—A set of the commercially valuable minerals of Newfoundland.

Dr. F. Page.—West African Bush-cat (died in captivity).

Messrs. F. H. Phillips & Co.—Stone Crab *(Lithodes maia)*, female, brought to North Shields.

Mrs. Punshon.—Two framed portraits, viz., of the late John Hancock as a young man, in pencil by Edward Train, and of the late Rev. Geo. Cooper Abbs, in oils.

Jno. Reed.—Lower Carboniferous fossils from Cheeseburn.

J. Alaric Richardson.—Great Grey Shrike, shot at Newbiggin-by-the-Sea, Oct. 2, 1899.

J. D. Robinson.—Skins of Skunk and Virginian Opossum.

L. C. Ruffmann.—Leaf Insect (*Phyllium sp.*) from near Kandy, Ceylon.

J. F. Spence.—Golden Pheasant, male.

Miss Spence.—A selection of objects from the collection of the late J. F. Spence, including a series of Cheviot rocks and various other rock specimens; Chameleon, young Crocodile and other reptiles in spirits, etc.

Messrs. Sutton & Sons.—A case of agricultural seeds and grasses.

Thos. Thompson.—Short-tailed Field Vole, Winlaton, Dec. 7, 1901.

C. O. Trechmann, Ph.D., F.G.S.—A crystal of Jarrowite dredged from the Clyde near Cardross; figured by the donor in *Zeitschrift für Krystallographie*, Bd. 35, S. 383, Taf. 10, fig. 6.

Herbert Walker.—Cuckoo, young; near Otterburn, Aug. 5, 1901.

ADDITIONS TO THE LIBRARY

BY DONATION AND EXCHANGE,

FROM JULY 1ST, 1901, TO JUNE 30TH, 1902.

BRITISH SOCIETIES AND INSTITUTIONS.

Berwick-upon-Tweed:—Berwickshire Naturalists' Club.
History of the Club, vol. 17.

Bristol:—Museum and Reference Library.
Report of Museum Committee, 1900–01.

Cambridge University:—Philosophical Society.
Proceedings, vol. 11, parts 3, 4, 5.

Cardiff:—Naturalists' Society.
Report and Transactions, vol. 33, 1900–1901.

Dublin:—Royal Dublin Society.
Transactions, vol. 7, parts 8–13.
Proceedings, vol. 9, parts 3, 4.

Edinburgh:—Scottish Meteorological Society.
Journal, 3rd ser , no. 17.

Gateshead:—Gateshead Teachers' Natural History Society and Field Club.
Annual Report, 1901–02.

Hastings:—Hastings and St. Leonards Natural History Society.
8th Annual Report.

Leeds:—Philosophical and Literary Society.
81st Annual Report, 1900–01.

Leeds:—Yorkshire Naturalists' Union.
Transactions, parts 25, 26.

Liverpool:—Literary and Philosophical Society.
Proceedings, vol. 55.

Liverpool:—Naturalists' Field Club.
Proceedings, 1901.

London :—British Association for the Advancement of Science.
Report of 71st Meeting, Glasgow, 1901.

London :—British Museum (Natural History), South Kensington.
Catalogue of Fossil Fishes, part 4.
,, Lepidoptera Phalænæ, vol. 3, with plates.
Hand List of Birds, vol. 3.

London :—Quekett Microscopical Club.
Journal, ser. 2, vol. 8, nos. 49, 50.

London :—Zoological Society.
Proceedings, 1901, vol. 1, part 2 ; vol. 2, parts 1, 2.
Transactions, vol. 16, parts 2, 3, 4.

Manchester :—Literary and Philosophical Society.
Memoirs and Proceedings, vol. 45, parts 3, 4 ; vol. 46, parts 1–5.

Middlesbrough :—Cleveland Naturalists' Field Club.
Proceedings, vol. 1, no. 3.

Newcastle-on-Tyne :—Institute of Mining and Mechanical Engineers.
Transactions, vol. 49, part 6 ; vol. 50 ; vol. 51. parts 1, 2.
Annual Report, 1900–01.
Index to Transactions, vols. 1–38, 1852–1889.
Subject-matter Index of Mining etc. Literature for 1900.

Northampton :—Northamptonshire Natural History Society and Field Club.
Journal, vol. 11, 1901.

Norwich :—Norfolk and Norwich Naturalists' Society.
Transactions, vol. 7, part 2.

Plymouth :—Plymouth Institute.
Report and Transactions, vol. 13, part 3.

Southport :—Society of Natural Science.
Sixth Report, 1900–01.

Stone, Staffs. :—North Staffordshire Field Club.
Annual Report and Transactions, vols. 35, 36.

Worcester :—Public Library, Museum, and Art Gallery.
Report of Committee, 1900–01.

York :— Yorkshire Philosophical Society.
Annual Report for 1901.

COLONIAL SOCIETIES AND INSTITUTIONS.

Cape Town:—South African Museum.

Annals, vol. 2, parts 6, 7, 8.

Montreal:—Natural History Society.

Canadian Record of Science, vol. 8, nos. 6, 7.

Ottawa:—Geological Survey of Canada.

Annual Report, vol. 9.

Index to Reports, 1863–1884.

Contributions to Canadian Palæontology, vol. 2, part 2; vol. 4, part 2.

Catalogue of Canadian Birds, part 1.

Catalogue of the Marine Invertebrata of Eastern Canada.

Sydney, N.S.W.:—Royal Society.

Journal and Proceedings, vol. 34.

Sydney, N.S.W.:—Australian Museum.

Report of Trustees for 1900.

Records, vol. 4, nos. 2–5.

AMERICAN SOCIETIES AND INSTITUTIONS.

UNITED STATES OF AMERICA.

Boston:—Society of Natural History.

Proceedings, vol. 29, nos. 15–18; vol. 30, nos. 1, 2.

Occasional Papers, no. 6.

Boston:—American Academy of Arts and Sciences.

Proceedings, vol. 36, nos. 24–29; vol. 37, nos. 1–16.

Buffalo:—Society of Natural Sciences.

Bulletin, vol. 7, no. 1.

Cambridge:—Museum of Comparative Zoology, Harvard College.

Bulletin, vol. 36, nos. 7, 8; vol. 39, nos. 1–3; vol. 40, no. 1.

Bulletin, Geological Series, vol. 5, nos. 5, 6.

Memoirs, vol. 25, no. 1; vol. 26, nos. 1–3; vol. 27, no. 1.

Annual Report of the Curator, 1900-01.

Columbus;—Ohio State University.

31st Annual Report, parts 1, 2.

Milwaukee:—Wisconsin Natural History Society.

Bulletin, vol. 1, no. 4.

Minneapolis, Minn.:—Geological and Natural History Survey.

Minnesota Botanical Studies, 2nd ser., parts 5, 6.

New York:—Academy of Sciences.

Annals, vol. 13, parts 2, 3; vol. 14, parts 1, 2.
Memoirs, vol. 2, part 3.

Philadelphia:—Academy of Natural Sciences.

Proceedings, vol. 53, parts 1, 2.

Philadelphia:—American Philosophical Society.

Proceedings, vol. 40, nos. 167–167.
Transactions, vol. 20, part 2.

Portland, Maine:—Society of Natural History.

Proceedings, vol. 2, part 5.

St. Louis:—Academy of Science.

Transactions, vol. 10, nos. 9–11; vol. 11, nos. 1-5.

Washington:—Smithsonian Institution.

Annual Reports for 1899, 1900.
Miscellaneous Collections, vols. 42, 43; no. 1258.
Contributions to Knowledge, vol. 29, no. 1309.

Washington:—Smithsonian Institution: Bureau of Ethnology.

18th Annual Report, part 2.

Washington:—Smithsonian Institution, U.S. National Museum.

Report of U.S. National Museum, 1899.
Bulletin, no. 50, part 1.
Proceedings, vol. 22.

Washington:—United States Geological Survey.

20th Annual Report, parts 2–5, 7.
21st ,, ,, parts 1-4, 6.
Monographs, 39, 40.
Bulletins, 163–176.
Preliminary Report on the Cape Nome Gold Region, Alaska.

Washington:—Department of Agriculture.

North American Fauna, nos. 20, 21.

SOUTH AMERICAN STATES.

Buenos Aires, Argentine States:—Museo Nacional.

Comunicaciones, tomo 1, nos. 9, 10.

Mexico:—Instituto Geologico.

Boletin, num. 15.

Montevideo, Uruguay:—Museo Nacional.

Anales, tomo 3, entr. 20, 21; tomo 4, entr. 19, 22.

EUROPEAN SOCIETIES AND INSTITUTIONS.

Bergen :—Bergens Museum.
Aarbog, 1901.
Crustacea of Norway (G. O. Sars), vol. 4, parts 1–6.

Christiania :— Videnskabs-Selskabet.
Forhandlinger, 1900, 1901.

Copenhagen :—Naturhistoriske Forening.
Videnskabelige Meddelelser, 1901.

Dresden :—Naturwissenschaftliche Gesellschaft Isis.
Sitzungsberichte and Abhandlungen, 1900, 1901.

Helsingfors :—Societas pro Fauna et Flora fennica.
Acta, vol. 20.
Meddelanden, part 27.

Marseilles :—Faculté des Sciences.
Annales, tome 11.

Paris :—Muséum d'Histoire Naturelle.
Bulletin, 1900, nos. 7-8 ; 1901, nos. 1–3.

Stockholm :—Kongliga Svenska Vetenskaps-Akademiens.
Handlingar, Bd. 33, 34.
Bihang, Bd. 26
Lefnadsteckningar, Bd. 4, nos. 1, 2.

Trencsen :—Naturwissenschaftlicher Verein.
Jahresheft, 1900–01.

Upsala :—Geological Institution, University of Upsala.
Bulletin, vol 5, part 1.

Vienna :—K. k. zoologisch-botanische Gesellschaft.
Verhandlungen, Bd. 51.

MISCELLANEOUS.

"Hawaiian Feather Work" (Memoirs of the Bernice Pauahi Bishop Museum, Honolulu, vol. 1, no. 1). *Presented by the Museum.*

"Holbein and John Bewick," by Wendell P. Garrison; reprinted from "The Bibliographer" (New York). *Presented by the Author.*

Reprints of two papers by Chas. O. Trechmann, Ph. D., F.G.S :—
"Note on a British Occurrence of Mirabilite."
"Ueber einen Fund von ausgezeichneten Pseudogaylussit – (=Thinolith=Jarrowit) Krystallen."
Presented by the Author.

"Reminiscences of a Yorkshire Naturalist," by the late Prof. W. C. Williamson. *Presented by the Author's Executors.*

Books on Natural History, about 120 volumes, including a number of standard works. Bequeathed by the late Dr. Thos. Pigg.
Per Miss W. Ridley Pigg.

"Nature," July 1st, 1901, to June 30th, 1902.
Presented by the Publishers.

"Museums Journal," July, 1901, to June, 1902.
From the Museums Association.

"Rhopalocera Exotica," parts 57, 58, 59, completing the work.
Purchased.

ADDRESS TO THE MEMBERS OF THE TYNESIDE NATURALISTS' FIELD CLUB.

READ BY THE PRESIDENT, W. MARK PYBUS, ESQ., ON THE FIFTY-SEVENTH ANNIVERSARY, HELD IN THE COMMITTEE ROOM OF THE LITERARY AND PHILOSOPHICAL SOCIETY, ON THE 1ST DAY OF MAY, 1903.

Ladies and Gentlemen,—When it was suggested to me that for a second year I should be honoured by presiding over you I felt the many obligations I owed to your indulgence and support increased; and though I greatly valued the high distinction you proposed to confer upon me, in the interests of the Club I hesitated to accept the office, as I have always felt an annual change of Presidents has had a beneficial effect in the promoting of your researches and in adding interest and variety to your pursuits and proceedings. I, however, conferred with some of you before returning an answer to the complimentary letter of your Honorary Secretaries, and as I found there was a feeling it was undesirable a new President should take office until there had been an adjustment of your relationship with the Natural History Society, then under discussion, I at once brushed aside all other considerations and placed myself at your service.

My first duty is to preserve some record of our Field Meetings :—

Castle Eden Dene and Black Hall Rocks.

From the records of the Club I find Castle Eden Dene has been visited on at least eight occasions :—

16th June, 1847.	15th June, 1870.
15th July, 1852.	25th June, 1877.
(no date) July, 1854.	24th June, 1889.
27th June, 1860.	13th October, 1893.

I believe there was a later meeting, but the record of it has not yet been published, and I was unfortunately not present.

This was our first meeting of the season, and was fixed for the 28th May, 1902. The morning broke with bright sunshine and a blue sky, in which, however, floated a few small dark clouds indicating the possibility of light passing showers, though a strong westerly wind gave promise of little inconvenience; and this the day realised. The first section of the party took train at Newcastle Central Station at 9.25 a.m., and arrived at Castle Eden at 10.42 a.m. By the time the Dene had been traversed twelve members had gathered together. On our way from the station to the entrance gates we observed the Ash was bare, whilst the Oak was almost in full leaf. Sycamores and Horse Chestnuts were in blossom, and Lilacs were approaching their greatest beauty. The immense Limes and Elms attracted the attention and admiration of the members.

On our way to visit the well known cascade and Gunner's Pool we met one of the estate gamekeepers. He had just shot a Sparrow Hawk from her nest, and had called in the assistance of a second keeper for the purpose of assisting in the destruction of her mate. He could not say whether the nest contained eggs or young, but that was matterless—a young pheasant had disappeared, and the Sparrow Hawks must be destroyed. Unless some effective protection be afforded, this beautiful bird as a British resident will soon be a mere recollection of the past.

The comparatively harmless Kestrel once so common in the Dene was never seen, and possibly may have been exterminated. Whether the Badger, once a resident in the Dene, exists there now I cannot say. On our way by the stream flowing from the Gunner's Pool we observed a great number of large and healthy looking trout. This indicates that some change has taken place in the water, as a very few years ago no fish could live in it. Possibly the closing of the colliery may have had something to do with this.

At the Pool the huge wall of magnesian limestone, rising possibly 150 feet, gave consideration to the mighty questions of its formation and the hollowing out of the ravine.

Near the Pool was found the Butterfly Orchis, but the Lady's Slipper, found in the Dene on the Club's visit in 1852, was not seen, though searched for. The only butterfly we observed was the Common White. A nest of the Willow Wren, containing six eggs, was found in the ground, but received more kindly consideration than the unfortunate Sparrow Hawks. The air was odoriferous with sweetbriars, and the flowering currant by its contrast added beauty to the paths. Here and there huge blocks of limestone detached from time to time from the cliffs lay at both sides of us; and nearing Deneholme one part of the cliff in its full grandeur claimed our admiration and wonderment. The pink soil of the top covering had streaked the yellow and white limestone below it as though it had been the work of a painter's brush; and the background of firs and larches in different shades of green formed fitting frames for so beautiful a scene. Harts-tongue was fairly plentiful, and the flowers of the Cowslip reached a height of at least 15 inches.

The huge railway bridge or viaduct, 145 feet high, connecting Hart with Seaham Harbour, now presented itself, and though no doubt great as an engineering feat, it certainly does not add beauty to the landscape.

After obtaining refreshments at the Temperance Inn, some of the party proceeded to explore Hardwicke Dene, which, though smaller, and of a similar limestone formation is, I think, more rugged and wilder than Castle Eden Dene. We ascended by a very steep path to the top of the Dene, much the same height as the railway bridge, and after proceeding some distance along the path we discovered a number of plants of the Birds' Nest Orchis over the roots of the yew. After continuing up the greater part of the Dene, we descended the very steep, and in places almost perpendicular banks until we reached the bed of the stream, at this time almost dry. Hart's-tongues were numerous, and the Hard Prickly Shield Fern was growing in considerable numbers, their roots sustaining themselves in the soft limestone entirely free from other soil. From about four feet up the bank a Blackbird

fluttered away, and on examining the place we found a nest containing two eggs and two newly hatched birds. We then rejoined the remainder of the members who had waited at Deneholme, and then proceeded on an inspection of the Black Hall Rocks about two miles distant. These have now assumed the formation of stacks, caves, and arches, the seaward support of the main arch being itself a mass of caves, the limestone remaining being little more than a shell. The time for return was now approaching, and we journeyed to Hazledene Station for the seven o'clock train. In passing through the village it was with regret we noticed the dilapidated and tenantless condition of many houses caused by the closing of the colliery. At a meeting held in the Railway Station four new members were elected; and shortly after eight o'clock the main body reached Newcastle, much pleased with the day's field work. The following birds were either seen or heard :—

Thrush, mature, young flying and young just hatched.
Blackbird ,, ,, ,,

Meadow Pipit	Sparrow
Tree Pipit	Tree Sparrow
Missel Thrush	Bullfinch
Grey Wagtail	Sparrow Hawk
Pied Wagtail	White-throat
Stock Dove	Chiff-chaff
Coal Tit	Wren
Long-tailed Tit	Wood Wren
Blue Tit	Willow Wren
Linnet	Jackdaw
Greenfinch	Starling
Yellow Bunting	Rook
Robin	Corncrake

The ferns observed in the Dene were not so numerous in their variety as we expected, and consisted only of :—

Male Fern	Hard Prickly Shield Fern
Female Fern	Hart's-tongue
Broad Buckler Fern	Hard Fern

Amongst the plants observed were the following :—

Cuckoo Pint, *Arum maculatum.*
Lesser Celandine, *Ranunculus Ficaria.*
Leopard's Bane, *Doronicum Pardalianches.*
Red Campion (in separate patches of male and female), *Lychnis diurna.*
Wood Geranium, *Geranium sylvaticum.*
Primrose, *Primula vulgaris.*
Forget-me-not, *Myosotis palustris.*
Large Forget-me-not, *Myosotis sylvatica.*
Yellow and Blue Forget-me-not, *Myosotis versicolor.*
Water Avens, *Geum rivale.*
Wild Strawberry, *Fragaria vesca.*
Flowering Strawberry, *Potentilla Fragariastrum.*
Sloe, *Prunus spinosa.*
Dandelion, *Taraxacum Dens-leonis.*
Dog's Mercury (in separate patches of male and female plants), *Mercurialis perennis.*
Cowslip, *Primula veris.*
Coltsfoot, *Tussilago Farfara.*
Wood Anemone, *Anemone nemorosa.*
Wild Hyacinth, *Agraphis nutans.*
Wood-sorrel, *Oxalis Acetosella.*
Golden Saxifrage, *Chrysosplenium oppositifolium.*
Purple Comfrey, *Symphytum officinale.*
Wall Lettuce, *Lactuca muralis.*
Common Bugle, *Ajuga reptans.*
Figwort, *Scrophularia nodosa.*
Butterfly Orchis, *Habenaria bifolia.*
Bird's-nest Orchis, *Neottia Nidus-avis.*
Common Orchis, *Orchis mascula.*
Ground Ivy, *Nepeta Glechoma.*
Wood-ruff, *Asperula odorata.*
Dog Violet, *Viola canina.*
Daisy, *Bellis perennis.*
Wood Sanicle, *Sanicula europœa.*
Silverweed, *Potentilla anserina.*
Jack-by-the-Hedge, *Sisymbrium Alliaria.*
Lily of the Valley, *Convallaria majalis.*
Hairy Violet, *Viola hirta.*
Self-heal, *Prunella vulgaris.*
Great Horse-tail, *Equisetum Telmateia,*

Small Valerian, *Valeriana dioica.*
Chickweed, *Stellaria media.*
Wood Stitchwort, *Stellaria nemorum.*
Lady's Bedstraw, *Galium cruciatum.*
Buttercup, *Ranunculus bulbosus.*
Dove's-foot Cranesbill, *Geranium molle.*
Bloody Cranesbill, *Geranium sanguineum.*
Ribswort Plantain, *Plantago lanceolata.*
Germander Speedwell, *Veronica Chamædrys.*
Soapwort, *Saponaria officinalis.*
Sea-pink, *Armeria maritima.*
Scurvy Grass, *Cochlearia officinalis.*
Bush Vetch, *Vicia sepium.*
Marsh Marigold, *Caltha palustris.*
Wild Garlic, *Allium ursinum.*
Yellow Pimpernel, *Lysimachia nemorum.*
Whin, *Ulex europœus.*
Greater Stitchwort, *Stellaria Holostea.*

The Second Field Meeting of the Season was held at the Northumberland Lakes on the 19th of June, 1902, but I was unfortunately from home, and am indebted to your Honorary Secretaries for an account of the day's proceedings. Probably owing to the unpropitous character of the weather for several days previous, the attendance was small. Fortunately for those who assembled the day turned out delightfully fine. Alighting at Bardon Mill, the members proceeded leisurely towards Crag Lough. On the way many interesting plants were noticed by the botanists.

On reaching Crag Lough a considerable time was spent in studying its flora and fauna. The only birds observed here were one or two Mallards, a Waterhen, and a pair of Dunlins. Oak, Beech, and Parsley Ferns were abundant on the rocky lake side. Crag Lough is the most picturesque of all these little lakes or tarns. On the south side of the Lough, the High Shields Crags, consisting of intrusive basalt, give a sombre grandeur to the place, and the trees—pines principally—growing from the fissures of the rocks add still further to its charms.

After partaking of refreshment at a farmhouse overlooking the Lough, the party proceeded to the summit of Hotbank Crags, where a commanding view was obtained of Brownlee and Greenlee Loughs to the north, as well as of Crag Lough to the west. The two former fall far short of the latter in appearance, their formations being mere depressions in the moorland.

On the return journey the Procumbent Pearlwort, Globe Flower, Stone Bramble, and Parti-coloured Scorpion Grass were gathered. Broom was in full and luxuriant bloom. Much time was spent in looking for Broomrape, but without success. The limestone which exists in the Carboniferous strata in beds of various thickness has been extensively quarried here and there in the district.

The following list contains the botanical and ornithological observations of the day :—

BOTANY.

Lesser Celandine, *Ranunculus Ficaria.*
Wood Crowfoot, ,, *auricomus.*
Buttercup, ,, *bulbosus.*
Creeping Buttercup, ,, *repens*
Meadow Crowfoot, ,, *acris.*
Globe Flower, *Trollius europæus.*
Marsh Marigold, *Caltha palustris.*
Barberry, *Berberis vulgaris.*
Common Poppy, *Papaver Rhœas.*
Shepherd's Purse, *Capsella Bursa-pastoris.*
Scurvy Grass, *Cochlearia officinalis.*
Whitlow Grass, *Draba verna.*
Bitter Cress, *Cardamine amara.*
Cuckoo Flower, *Cardamine pratensis.*
Hairy Bitter Cress, *Cardamine hirsuta.*
Water Cress, *Nasturtium officinale.*
Hedge Mustard, *Sisymbrium officinale.*
Runch or Charlock, *Sinapis arvensis.*
Dog Violet, *Viola canina.*
Marsh Violet, *Viola palustris.*
Common Milkwort (in blue, pink, and white flowers), *Polygala vulgaris.*

Ragged Robin, *Lychnis Flos-cuculi.*
Red Campion, ,, *diurna.*
Evening Campion, *Lychnis vespertina.*
Greater Stitchwort, *Stellaria Holostea.*
Bog Stitchwort, ,, *uliginosa.*
Three-nerved Sandwort, *Arenaria trinervis.*
Thyme-leaved Sandwort, ,, *serpyllifolia.*
Mouse Ear Chickweed, *Cerastium arvense.*
Cathartic Flax, *Linum catharticum.*
Meadow Geranium, *Geranium pratense.*
Wood Cranesbill, ,, *sylvaticum.*
Herb Robert, ,, *Robertianum.*
Dove's-foot Cranesbill, *Geranium molle.*
Cut-leaved Cranesbill, ,, *dissectum.*
Common Woodsorrel, *Oxalis acetosella.*
Whin, *Ulex europæus.*
Needle Furze, *Genista anglica.*
Broom, *Cystisus scoparius.*
Bird's-foot Trefoil, *Lotus corniculatus.*
Tufted Vetch, *Vicia Cracca.*
Bitter Vetch, *Lathyrus Orobus.*
Bush Vetch, *Vicia sepium.*
Hairy Vetch, ,, *hirsuta.*
Birdcherry, *Prunus Padus.*
Sloe ,, *spinosa.*
Herb Bennett, *Geum urbanum.*
Water Avens, ,, *rivale.*
Creeping Cinquefoil, *Potentilla reptans.*
Strawberry, *Fragaria vesca.*
Stone Bramble, *Rubus saxatilis.*
Lady's Mantle, *Alchemilla vulgaris.*
Parsley Piert, ,, *arvensis.*
Salad Burnet, *Poterium Sanguisorba.*
Mountain Ash, *Pyrus Aucuparia.*
Hawthorn, *Cratægus Oxyacantha.*
Water Blinks, *Montia fontana.*
Wood Sanicle, *Sanicula europæa.*
Cowbane, *Cicuta virosa.*
Fool's Parsley, *Æthusa Cynapium.*
Wild Beaked Parsley, *Anthriscus sylvestris.*
Crosswort, *Galium cruciatum.*
Hedge Bedstraw, *Galium Mollugo.*

Marsh Bedstraw, *Galium uliginosum.*
Sweet Wood Ruff, *Asperula odorata.*
Marsh Valerian, *Valeriana dioica.*
Mouse Ear Hawkweed, *Hieracium Pilosella.*
Bilberry, *Vaccinium Myrtillus.*
Common Comfrey, *Symphytum officinale.*
Forget-me-not, *Myosotis palustris.*
Field Scorpion Grass, *Myosotis arvensis.*
Parti-coloured Scorpion Grass, *Myosotis versicolor.*
Red Rattle, *Pedicularis palustris.*
Yellow Rattle, *Rhinanthus Cristagalli.*
Thyme-leaved Speedwell, *Veronica serpyllifolia.*
Wall Speedwell, ,, *arvensis.*
Germander Speedwell, ,, *Chamœdrys.*
Common Speedwell, ,, *officinalis.*
Brooklime, ,, *Beccabunga.*
Field Speedwell, ,, *agrestis.*
Hairy Mint, *Mentha aquatica.*
Bugle, *Ajuga reptans.*
Common Butterwort, *Pinguicula vulgaris.*
Primrose, *Primula vulgaris.*
Cowslip, ,, *veris.*
Yellow Pimpernel, *Lysimachia nemorum.*
Greater Plantain, *Plantago major.*
Ribwort, ,, *lanceolata.*
Common Sorrel, *Rumex acetosa.*
Sheep's Sorrel, ,, *acetosella.*
Spotted Orchis, *Orchis maculata.*
Early Orchis, ,, *mascula.*
Marsh Orchis, ,, *latifolia.*
Green Habenaria, *Habenaria viridis.*
Blue Bell, *Scilla nutans.*
Ramsons, *Allium ursinum.*
Lesser Bog Rush, *Juncus uliginosus.*
Great Woodrush, *Luzula sylvatica.*
Hairy Woodrush, ,, *pilosa.*
Field Woodrush, ,, *campestris.*
Cuckoo Pint, *Arum maculatum.*
Common Polypody, *Polypodium vulgare.*
Beech Fern, ,, *Phegopteris.*
Oak Fern, ,, *Dryopteris.*
Shield Fern, *Polystichum angulare.*

Male Fern, *Lastrea Filix-mas.*
Lady Fern, *Athyrium Filix-fœmina.*
Hard Fern, *Blechnum Spicant.*
Moonwort, *Botrychium Lunaria.*

Ornithology.

Carrion Crow
Rook
Jackdaw
Starling—a great many fledglings
Chaffinch
Greenfinch
Yellow Bunting
Skylark
Pied Wagtail
Tree Pipit
Meadow Pipit
Long-tailed Titmouse
Coal Titmouse
Blue Titmouse
Great Titmouse
Chiffchaff
Willow Wren
Wood Wren
Whitethroat
Sedge Warbler
Grasshopper Warbler
Song Thrush and nest
Missel Thrush
Blackbird
Robin
Redstart
Wheatear
Stonechat
Dipper
Common Wren and nest
Swallow
House Martin
Cuckoo
Swift
Mallard
Lapwing
Golden Plover
Curlew
Common Sandpiper
Dunlin
Blackheaded Gull
Water Hen
Ring Dove
Partridge

Entomology.

BUTTERFLIES.

Small Garden White
Green-veined White
Large Heath
Small Heath
Red Admiral
Small Tortoise Shell

MOTHS.

Heath Moth
Heath Latticed

THE THIRD FIELD MEETING of the year was fixed for HOLY ISLAND for the 18th of July, 1902. Absence in London prevented me from being present, and I am indebted to Mr. Adamson, one of your honorary secretaries, for the following account of the day's proceedings.

Some of the members began the day very early by travelling with the train which leaves the Central Station at 6.20 a.m. Contingents followed by trains leaving at 8.20 and 9.30 a.m. During the day, which was of an exceedingly propitious character, the Links, the Castle Rock and Heugh, the fields and lanes, the sea shore, St. Cuthbert's Island, and the loch and its shores were visited. The ornithologist, botanist, geologist, conchologist, and entomologist were all busily engaged in their several pursuits. The geological formation of the Island consists of strata similar to that of the mainland, viz., Carboniferous Limestone. Red and white sandstone and slate clay are associated with the limestone. In walking over the shingly shores, stones and boulders of porphyry, granite, greywacke, basalt, and sandstone were seen. The picturesque portions—Castle Hill and the Heugh —are due to huge upheavals of intrusive basalt. The coves or caves have almost entirely disappeared on account of the limestone industry.

A list of the plants observed by the botanists will hereafter be given, but a few remarks about the more characteristic ones may not be out of place. The Hound's Tongue, growing in great profusion, was seen oftener in fruit than in bloom. Its disagreeable smell prevents one from gathering it, although its lurid red flowers look inviting. One of the Gromwells—the oyster plant—prefers a solitary habitation on the shingly beach within high water mark. It was in full bloom of large beautiful purplish flowers. The fleshy and glaucous leaves have an oyster-like flavour when chewed. The plant sometimes disappears, and after some years re-appears in the same locality. The Common Bugloss with its bright blue flowers and rough hispid leaves and stems is everywhere to be seen. This plant seems to be visited by a great number of insects,

probably owing to the ready access to the honey the plant contains. The small Bugloss or Ox-tongue is another very common plant on the island. Like its relation—the Viper's Bugloss just mentioned—the Ox-tongue has rough foliage. The handsome pink dwarf species of Centaury was by far the most attractive bloom on the Links. It grows in great profusion, and being a bright sunny day it was seen at its best. On searching the wet sand the Glasswort was soon discovered. It has a curiously jointed stem with numerous branches and no leaves. The Sea Purslane, conspicuous for its mealy leaves, was also plentiful. Not so however the Saltwort, which was only once noticed. Now and again in traversing the damp and mossy spots of the Links, the Bog Pimpernel—the sweetest and dearest of all marsh plants—was observed resting gracefully upon its mossy bed. Before leaving the Links a very diligent search on hands and knees was made in the neighbourhood of the Snook for a very rare sedge—Carex incurva—which has chosen the Island for its only English station. The visit was considered too early for its appearance, September being the month in which it is generally found. The most characteristic plant noticed on visiting the loch was the Smooth-naked Horsetail, occupying almost the whole sheet of water and growing to a great height, displaying its true aquatic nature. There was not sufficient time left to search for the Statice on St. Cuthbert's Island.

The ornithologists had frequent opportunities of observing Rock Pipits, Sandwich, Common, and Arctic Terns, Eider Ducks, and Black-headed Gulls. The last named were very numerous in the neighbourhood of the loch. Several nests of the Ring Dotterel were noticed. Each nest contained two or three eggs. A considerable number of Redshanks were also seen, and an odd Curlew was now and again heard during the day. The luxuriant growth of Equisetum prevented the party from catching a glimpse of any of the feathered denizens which frequent the loch. The bleached skull of a Shoveller was picked up on the links. Several Dragon Flies of the species *Calopteryx virgo* were seen on the

wing by the loch side. A small Cockchaffer *(Rhizotragus solstitialis)* was captured. Many of this beetle were seen in flight. The Cinnabar Moth *(Euchelia Jacobææ)* was taken; and the Humming-bird Hawk Moth was noticed in the neighbourhood of the Castle visiting the wallflowers which grow plentifully and naturally on the old ruins.

The excursion having been brought to a close, the members reassembled in the village to recross the sands to the mainland. The sands are covered by the sea twice a day as the tide flowed and ebbed eleven hundred years ago in the time of Bede. Scott's lines in "Marmion" express the natural relationship of the Island to the mainland in those distant ages as follows:—

> "For with the flow and ebb, its style
> Varies from continent to isle;
> Dry-shod over sands, twice every day,
> The pilgrim to the shrine finds way;
> Twice every day the waves efface
> Of staves and sandall'd feet the trace."

The success of the meeting was in a great measure due to the kindness and untiring energy of Mr. Bolam, of Berwick, who met the first detachment of members at Beal, and who throughout the day ungrudgingly and pleasantly imparted his experience and knowledge of the natural history of the Island.

Plants observed:—

Great Spearwort, *Ranunculus Lingua.*
Lesser Spearwort, ,, *Flammula.*
** Celery-leaved Ranunculus, *Ranunculus sceleratus.*
Field Poppy, *Papaver Rhœas.*
Fumitory, *Fumaria capreolata.*
** Wallflower (naturally on old walls of castle), *Cheiranthus Cheiri.*
Common Watercress, *Nasturtium officinale.*
Hairy Bittercress, *Cardamine hirsuta.*
Scurvy Grass, *Cochlearia officinalis.*
Dyer's Rocket, *Reseda Luteola.*
Bladder Campion, *Silene inflata.*
Variety of Bladder Campion, *Silene maritima.*

** Grow in great profusion, and may be said to give a character to the Island.

White Lychnis, *Lychnis vespertina.*
Ragged Robin, ,, *Flos-cuculi.*
Knotted Pearlwort, *Sagina nodosa.*
Orate Sandwort, *Arenaria peploides.*
Common Sandspurrey, *Spergularia rubra.*
Cathartic Flax, *Linum catharticum.*
Dwarf Mallow, *Malva rotundifolia.*
Common Mallow, *Malva sylvestris.*
Meadow Geranium, *Geranium pratense.*
Dove's Foot Geranium, *Geranium molle.*
Cut-leaved Geranium, ,, *dissectum.*
* Common Erodium, *Erodium cicutarium.*
Restharrow, *Ononis arvensis.*
Rough Trefoil, *Trifolium scabrum.*
Common Lotus, *Lotus corniculatus.*
Lady's Finger, *Anthyllis Vulneraria.*
Tufted Vetch, *Vicia Cracca.*
,, *lathyroides.*
Meadow Sweet, *Spiræa Ulmaria.*
Silverweed, *Potentilla anserina.*
Great Burnet, *Sanguisorba officinalis.*
** Burnett Rose, *Rosa pimpinellifolia.*
Rosebay, *Epilobium angustifolium.*
Great Willow Herb, *Epilobium hirsutum.*
* Wall Pepper, *Sedum acre.*
Marsh Penny Wort, *Hydrocotyle vulgaris.*
Crosswort, *Galium Cruciata.*
Lady's Bedstraw, *Galium verum.*
Marsh Galium, ,, *palustre.*
Hedge Galium, ,, *Mollugo.*
All-heal, *Valeriana officinalis.*
Ox-eye Daisy, *Chrysanthemum Leucanthemum.*
Common Burdock, *Arctium Lappa.*
Milk Thistle, *Carduus Marianus.*
Greater Knapweed, *Centaurea scabiosa.*
Meadow Salsafy, *Tragopogon pratensis.*
Common Hawkbit, *Leontodon hispidus.*
Cat's Ear, *Hypochæris radicata.*
Corn Sow Thistle, *Sonchus arvensis.*
* Sea Milkwort, *Glaux maritima.*
Common Pimpernel, *Anagallis arvensis.*

* Not common.

** Grow in great profusion, and may be said to give a character to the Island.

** Bog Pimpernel, *Anagallis tenella.*
* Brookweed, *Samolus Valerandi.*
** Centuary (small leaved kind), *Erythræa Centaurium.*
* Buckbean, *Menyanthes trifoliata.*
** Viper's Bugloss, *Echium vulgare.*
* Oyster Plant, *Mertensia maritima.*
Forget-me-not, *Myosotis palustris.*
Field Forget-me-not, *Myosotis arvensis.*
** Small Bugloss, *Lycopsis arvensis.*
** Hound's Tongue, *Cynoglossum officinale.*
** Water Veronica, *Veronica Anagallis.*
Common Eyebright, *Euphrasia officinalis.*
Watermint, *Mentha aquatica.*
Common Thrift, *Armeria vulgaris.*
Sea Plantain, *Plantago maritima.*
Buckshorn Plantain, *Plantago Coronopus.*
** Prickly Saltwort, *Salsola Kali.*
Common Orache, *Atriplex patula.*
* Amphibious Polygonum, *Polygonum amphibium.*
** Creeping Willow, *Salix reptans.*
Marsh Orchis, *Orchis latifolia.*
† Curved Carex, *Carex incurva.*
Divided Carex, *Carex divisa.*
Marsh Club Moss, *Lycopodium inundatum.*
* Smooth Equisetum, *Equisetum limosum.*

Birds observed :—

Rock Pipit, *Anthus obscurus.*
Wheatear, *Saxicola œnanthe.*
Eider, *Somateria mollissima.*
Common Curlew, *Numenius arquatus.*
Redshank, *Totanus calidris.*
Snipe, *Scolopax galliango.*
Blackheaded Gull, *Larus ridibundus.*
Sandwich Tern, *Sterna cantiaca.*
Common Tern, ,, *hirundo.*
Arctic Tern, ,, *arctica.*

* Not common.

** Grow in great profusion, and may be said to give a character to the Island.

† Rarest of all Holy Island plants; identity of specimens confirmed by Mr. Evans, of Berwickshire Club; but in a later letter from Mr. Adamson he doubts whether this plant was correctly identified.

Several nests of Common or Arctic Terns containing clutches of two or three eggs were noticed on the sea side of the Island, and some very young Redshanks were also seen.

ENTOMOLOGY.

Cinnabar Moth, *Euchilia Jacobææ.*
Humming Bird Hawk Moth, *Macroglossa Stellatarum.*
Small Cockchafer, *Rhizotrogus solstitialis.*

THE FOURTH MEETING of the Club was fixed for the district of ALLENDALE on Monday, the 11th of August, 1902.

The early morning announced itself with a blue sky and bright sunshine, but the exceptional clearness of the atmosphere indicated a possibility of rain later in the day. Thirteen members and their friends assembled in Newcastle Station, and left for Haydon Bridge at 10.25 a.m., reaching there at 11.13 a.m.

After suitable driving and hotel arrangements had been made, the journey to Allendale was commenced. The weather had become more threatening after leaving Newcastle, but the sky was of that changing character which indicated nothing more serious than occasional showers. The road from Haydon Bridge is through a dell in which flows the Langley Burn. By the side of the road is a stone cross, erected by the late Mr. C. J. Bates in 1883, which bears the following inscription :—

> "To the memory of James and Charles, Vicounts Langley, Earls of Derwentwater, beheaded on Tower Hill, London, 24th February, 1716, and 8th December, 1746, for loyalty to their lawful sovereign."

In a little while Langley Castle was reached at a distance of about 1½ miles from Haydon Bridge. This Castle was built about the year 1350, probably on the site of an older residence. It preserves all its original outlines, and is a characteristic example of a fortified English house of the time of its erection. In the beginning of the 15th century it appears to have been seriously damaged by Henry IV. as he advanced into the county against the Earl of Northumber-

land, who had joined in Archbishop Scrope's rebellion. The site of the Castle is in the angle formed by the Deanraw and Langley Burns. Its towers have a commanding view of the high ranges north of the Tyne from St. Oswald's to the Wall-town Crags. Foundations of the ordinary kind were dispensed with; great boulders were laid down, and the walls, averaging six feet thick, built on top of them. After the rising of 1715 the property was forfeited to the Crown; and in October, 1882, it was purchased by Mr. C. J. Bates, who unfortunately did not live long enough to see the completion of his restoration. A little to the south are the Langley Mills for the smelting of lead ore, but as seen from the highway they appear to be in ruins. A drive of two miles from Langley Castle brought us to Staward. Alighting here we proceeded to the well-known Peel, but little remains of this fortress or stronghold. It occupies a position which at the time of its construction must have been almost impregnable. The promontory on which it stands is only connected by a very narrow strip of land. The descent on the other three sides is very steep, and at the bottom flow the Allen and its tributory the Harsondale Burn. The three sides of the site of the Peel consist of rock, well wooded where a covering of soil is to be found. The stronghold was fortified further by artificially constructed defences. The walls of the Peel appear to have been some seven feet thick. Some of the stones of the Peel are evidently Roman, and may have been taken from the neighbouring stations. When the Peel was erected is not known; but in the year 1386 it appears to have been given to the Friars Eremite of Hexham. From the grass-covered plateau on which the remains of the Peel stand, a magnificent view, altogether alpine in its character, is to be had of the wild and steep banks of the Allen covered with pines, ash, alder, birch, and other trees, the charm of the scene being greatly added to by the varying tints of the foliage, which pass through all gradations from the softest of pale green to the darkest hues, where the green almost becomes sombreness. We then descended by a steep pathway to the bed of the

river, our hats covered all the way by flies, and following the river round the base of the promontory we arrived at a huge mass of rock lying across the bed of the stream, and through the centre of which in the course of ages it appears not only to have forced its way, but to have hollowed out a deep, dark looking pool. By a path better formed, but as steep as that by which we had descended, we returned to the road adjoining Staward Station. Here a very heavy shower overtook us, against which we obtained such protection as the trees afforded; but the crisp breeze soon dispelled from our clothes all moisture that had reached them, and after walking about a mile we resumed our drive. Travelling through park-like scenery, the bright greenness of the grass reminding us of Ireland, and passing the junction of the East and West Allen, we reached Whitfield, a lovely little village nestling in a hollow of woodland beauty. The horses requiring a short rest, and the ascent to the Allendale road being for some distance too steep for any avoidable weight, the party proceeded for some distance on foot, inspecting on the way the church, which is a Gothic structure built of freestone, its graceful spire rising 120 feet. The church is a modern one, having been built as late as 1860. In journeying up the ascent from the village to the more level road, a number of Goldcrests were observed on and flying amongst the trees; and the somewhat scarce and beautiful Butterfly Orchis was found. Driving along, on the left we passed Catton Road, and shortly reached Allendale Town (once the capital of the lead mining district), which stands at an elevation of 1,400 feet above the level of the sea. Allendale is a moorland village of no great beauty, though possessing a most exhilarating atmosphere. One of the former vicars of Allendale was Mr. Robert Patten, who was appointed chaplain to Mr. Forster, the General of the Pretender's army, and who afterwards obtained his pardon by writing the History of the Rebellion. After a short stay in the village in order to give the horses meal and water, we, by the alternative route to Langley, enjoyed the view of Langley Lake and its back-

ground of the range at the foot of which are the Northumberland Lakes. Here we rejoined the road over which we had driven in the morning, reaching Haydon Bridge shortly after six o'clock. After partaking of such hospitality as the Inn afforded, we elected three new members, and then strolling through the town or village, we re-assembled at the railway station, and reached Newcastle shortly after nine o'clock, all feeling refreshed by the invigorating mountain air.

Nothing new to the records of the Club was observed, though the flowering plants were very numerous. Many were found in flower much later than usual, owing to the coldness of the season; and on the return journey most of the party were glad to have recourse to such wraps as they had brought with them. Few birds were observed, birds of prey being entirely unseen. Fern life, though abundant, was confined to the commonest kinds, namely :—

The Bracken	The Lady Fern
Common Polypody	The Broad Buckler Fern
The Hard Fern	The Mountain Buckler Fern
The Male Fern	

The following is a list of the trees, plants, and birds observed :—

Lime Trees	Fir Trees
Spruce Trees	Birch Trees

The Lime Trees were in full bloom, a striking indication of the lateness of the season.

Scurvy Grass, *Cochlearia officinalis.*
Rock Rose, *Helianthemum vulgare.*
Wild Pansy, *Voila lutea.*
Milkwort, *Polygala vulgaris.*
Ragged Robin, *Lychnis Flos-cuculi.*
Vernal Sandwort, *Arenaria verna.*
Hairy St. John's Wort, *Hypericum hirsutum.*
Slender ,, ,, ,, *pulchrum.*
Musk Mallow, *Malva moschata.*
Purging Flax, *Linum catharticum.*
Wood Geranium, *Geranium sylvaticum.*
Herb Robert, ,, *Robertianum.*

Broom, *Cystisus scoparius.*
Black Medick, *Medicago lupulina.*
Meadow Clover, *Trifolium medium.*
White Clover, ,, *repens.*
Small Yellow Clover, *Trifolium minus.*
Bird's Foot Trefoil, *Lotus corniculatus.*
Wood Vetch, *Vicia sylvatica.*
Meadow Pea, *Lathyrus pratensis.*
Meadow Sweet, *Spiræa Ulmania.*
Herb Bennett, *Geum urbanum.*
Wild Strawberry (in fruit), *Fragaria vesca.*
Tormentil, *Potentilla Tormentilla.*
Creeping Cinquefoil, *Potentilla reptans.*
Silverweed, *Potentilla anserina.*
Lady's Mantle, *Alchemilla vulgaris.*
Agrimony, *Agrimonia Eupatoria.*
Great Burnet, *Poterium officinale.*
Grass of Parnassus, *Parnassia palustris.*
English Sedum, *Sedum anglicum.*
Stonecrop, ,, *acre.*
Greater Willowherb, *Epilobium hirsutum.*
Hoary ,, ,, *parviflorum.*
Enchanters' Nightshade, *Circæa lutetiana.*
Hemlock, *Conium maculatum.*
Cow Parsnip, *Heracleum Sphondylium.*
Honeysuckle, *Lonicera Periclymenum.*
Marsh Galium, *Galium palustre.*
Hedge ,, ,, *Mollugo.*
Goosegrass, ,, *Aparine.*
Valerian, *Valeriana officinalis.*
Field Scabious, *Scabiosa arvensis.*
Golden Rod, *Solidago Virgaurea.*
Corn Marigold, *Chrysanthemum segetum.*
Nipple Wort, *Lapsana communis.*
Wall Lettuce, *Lactuca muralis.*
Sow Thistle, *Sonchus oleraceus.*
Mouse-ear Hawkweed, *Hieracium Pilosella.*
Giant Campanula, *Campanula latifolia.*
Harebell, ,, *rotundifolia.*
Billberry, *Vaccinium Myrtillus.*
Bell Heather, *Erica cinerea.*
Ling, *Calluna vulgaris.*

Centaury, *Erythræa Centaurium.*
Forget-me-not, *Myosotis sylvatica.*
Fig Wort, *Scrophularia nodosa.*
Ivy Linaria, *Linaria Cymbalaria.*
Foxglove, *Digitalis purpurea.*
Eyebright, *Euphrasia officinalis.*
Yellow Rattle, *Rhinanthus Crista-galli.*
Red Rattle, *Pedicularis palustris.*
Cow Wheat, *Melampyrum pratense.*
Thyme, *Thymus Serpyllum.*
Selfheal, *Prunella vulgaris.*
Betony, *Stachys Betonica.*
Hedge Stachys, *Stachys sylvatica.*
Wood Sage, *Teucrium Scorodonia.*
Yellow Pimpernel, *Lysimachia nemorum.*
Spotted Orchis, *Orchis maculata.*
Butterfly Orchis, *Habenaria bifolia.*
Helleborine, *Epipactis latifolia.*
Tway Blade, *Listera ovata.*
Bird's Nest Orchis, *Listera Nidus-avis.*
Great Spearwort, *Ranunculus Lingua.*
Spearwort, ,, *Flammula.*
Field Poppy, *Papaver Rhœas.*
Long-headed Poppy, *Papaver dubium.*
Dog Violet, *Viola canina.*
Marsh Violet, *Viola palustris.*
Meadow Geranium, *Geranium pratense.*
Restharrow, *Ononis arvensis.*
Blue Scabious, *Scabiosa succisa.*
Sneezewort, *Achillea Ptarmica.*
Burdock, *Arctium Lappa.*
Clustered Campanula, *Campanula glomerata.*
Autumn Gentian, *Gentiana Amarella.*

The following birds were observed :—

Blackbirds	Yellow Buntings
Song Thrushes	Pied Wagtails
Chaffinches	Long-tailed Titmice
Swallows	Willow Wrens
Linnets	Gold Crests

Generally bird life was very scarce.

THF FIFTH MEETING was fixed, on the invitation of one of our members, Mr. F. W. Rich, for HOLYSTONE AND HEPPLE, on the 25th September, 1902. For those living at some distance from the railway station early rising was a necessity. The first look outside revealed a spotlessly blue sky with a disappearing moon. A south-west wind, with the growing power of the sun, was gradually melting the hoar-frost which during the night had lain on the housetops and the grass. Nine members assembled in the Central Station in one of the very few bright mornings of an exceptionally summerless year. Punctually at 8.30 a.m. our train started, and after leaving Heaton we passed into a dark belt of fog and smoke; but this was soon left behind, and members congratulated themselves upon having selected a day the weather conditions of which were congenial to their pursuits. Rothbury was reached at 10.35 a.m., and members marvelled that in these days of progression so short a railway journey should occupy so long a time, and that the train service should allow of so short a stay in so beautiful, romantic, and historical a district. Our secretaries had arranged for a conveyance to be in waiting for us, and glancing at Cragside and the Simonside hills, we proceeded through the pretty little village of Thropton, and thence through Flotterton and Sharperton to Holystone. Here our kindly host met us and assumed the guidance of the party. After inspecting such remains of the Benedictine Priory as now exist, we proceeded to "Our Lady's Well," which lies in a small grove of firs not far from the junction of two Roman ways. The large quadrangular basin, 39 feet by 24 feet, is filled with water of the most crystalline purity. Through a bed of fine sand and gravel the spring rises, discharging about 16 gallons a minute. The sides of the basin are lined with a wall of ashlar work. In the centre stands a comparatively modern stone cross with an inscription upon it as follows :—

> "In this place Paulinus the Bishop
> baptised 3000 Northumbrians,
> Easter D.C. XXVII."

On a board fixed to one of the trees is another inscription to the same effect, but adding that the well belonged to the Nunnery in the village. There is considerable doubt as to whether the Bishop was here at this time, but the tradition, possibly incorrect as to date, may have some truth in it. At one end of the pool is a statue, said to have been intended for Paulinus, clad in long, flowing ecclesiastical robes. It was brought from Alnwick in 1780. A regret was expressed that time did not permit us to inspect the many ancient camps in the neighbourhood. There are, however, numerous indications that in times long gone by, and also more recently, the population must have been much greater than it is at the present day. Passing by way of Mungo's Well (called after St. Mungo or Kentigern, a Celtic missionary) over parts of Holystone Moor and the Dues Hill Farm, we gradually ascended through the heather and sweet scented bog-myrtle to the summit of the hill, said to be 1,000 feet above sea level; but we certainly thought the elevation greater than this. On the summit is a large circle of quarried stone indicating at one time the probabilities of a fortified place, and in the centre is the cairn of the ordinance survey. A beautiful view was obtained of the valley of the Coquet and the numerous windings of its course. On our way we started to flight several Grouse. Frogs were observed among the heather, and an adder which by its rapidity of movement was soon lost to sight. The right-angled course of the streams flowing down the hill were evidences of the beds being formed in the later period of the Ice Age. The descent of the hill is very steep, and foothold was difficult for those having boots without nails. The immense blocks of stone on the side of the hill added a grandeur and picturesqueness difficult to be described. Our route then lay across Woodhouses Farm, passing by the way the erect stones known as "The Five Kings," a relic of ancient British times. Four of these stones only now stand erect. By the side of the Hay Burn the brambles were still in flower—a poor prospect of any fruit this year.

The day which hitherto had been so bright now began to

be overclouded, though no rain fell. Near to Mr. Rich's house are the interesting ruins of a fourteenth century peel castle, said to be the first of a line of towers extending to Warkworth, and which formed a barrier against the Scottish borderers. Much of the accumulated debris has been removed by Mr. Rich, who contemplates a restoration of the building. The great arched vault on the ground floor no doubt was used for the storing of cattle in troublous times. The walls appear to be about five feet thick. The floor above the vault laid with stone slabs was no doubt a place of residence. There are no indications as to where the fireplace stood, but probably the fire was in the centre of the room, the smoke being allowed to escape through a hole in the gable. The stone sink in the wall was the means of discharging the house slops from the room to the ground. We then proceeded on the invitation of Mr. Rich to his residence. Inspecting the exterior of the house, we were very much pleased to notice the encouragement Mr. Rich had given to the House Martins. The time was too late for us to expect to see the nesting of the birds, though two heads were obtruded from one nest. Underneath a small bay window in the gable of the house we observed no less than six nests, and a seventh had fallen to the ground. Underneath the eaves of a very few feet of spouting we found an equal number. At the back of the house were about 30 nests. These we were informed had all been tenanted this year. Swifts too had nested numerously in the old walls of the peel, but had left about three weeks before. Under the coping stones of a wall Mr. Rich had left circular openings, and these had all been tenanted by Tits and Redstarts. After inspecting Mr. Rich's excellently mounted specimens of birds and his birds' eggs, and partaking of afternoon tea which had been provided for us, a vote of thanks was accorded to our host for his kindly consideration; and driving back to Rothbury we got the 4.35 p.m. train, and reached Newcastle at half-past six.

In the collection I was much interested to find the eggs of the Ringed Plover, which had been taken by the side of the

Coquet near Hepple. The birds had been observed here in the nesting season by the late Mr. Hancock, but I am not aware our Transactions contain the record of a nesting place so far from the sea and away from the shores of an inland lake. The evidence was not so clear as I should have liked, but from what Mr. Rich told us there appears to be but little doubt that near Hepple the Common and Hooded Crows pair and rear their young. The late Mr. Seebohm records an instance of seeing both forms in the same nest. The finding of the Rock Pipit so far from its natural home by the sea or in the salt marshes was also interesting.

Mr. Rich has been good enough to prepare for us a list of the birds, animals, and reptiles he has observed during his residence at Hepple or in the district, and of which the following is a copy :—

BIRDS.

Peregrine Falcon
Merlin
Kestrel
Sparrow Hawk
Hen Harrier
Long-eared Owl
Tawny Owl
Cuckoo
Kingfisher
Creeper
Raven
Carrion Crow
Hooded Crow
Rook
Jackdaw
Jay
Starling
House Sparrow
Tree Sparrow
Bullfinch
Green Finch
Chaffinch
Linnet
Redpole
Common Bunting
Yellow Bunting
Reed Bunting
Skylark
Tree Pipit
Rock Pipit
Meadow Pipit
Pied Wagtail
Grey Wagtail
Dipper
Blackbird
Ring Ouzel
Fieldfare
Missel Thrush
Redwing
Thrush
Redbreast
Redstart
Wheatear
Whinchat
Hedge Sparrow
Whitethroat

Sedge Warbler	Peewit
Wren	Curlew
Willow Wren	Woodcock
Golden Crested Wren	Common Snipe
Great Titmouse	Redshank
Blue Titmouse	Sandpiper
Longtailed Titmouse	Water Rail
Spotted Flycatcher	Corn Crake
Swallow	Water Hen
House Martin	Heron
Sand Martin	Greater Black-backed Gull
Swift	Lesser ,, ,,
Nightjar	Black-headed Gull
Ring Dove	Shieldrake
Rock Dove	Mallard
Red Grouse	Wigeon
Black Grouse	Teal
Partridge	Scaup
Pheasant	Wild Goose
Golden Plover	Grey Lag Goose
Ringed Dotterel	

Animals.

Bat	Squirrel
Hedgehog	Common Mouse
Mole	Field Mouse
Shrew	Brown Rat
Badger	Water Vole
Otter	Field Vole
Weasel	Hare
Stoat	Rabbit
Fox	Goat

Reptiles.

Lizard, *Zootoca vivipara.*
Blind Worm, *Anguis fragilis.*
Common Snake, *Natrix torquata.*
Viper, *Pelias Berus.*
Frog, *Rana temporaria.*
Toad, *Bufo vulgaris.*
Newt, *Lissotriton punctatus.*

FISHES.

Salmon, *Salmo salar*.
Bull Trout, *Salmo eriox*.
Trout, ,, *fario*.
Minnow, *Cyprinus phoxinus*.
Stickleback, *Gasterosteus aculeatus*.
Loach, *Cobitis barbatula*.
Eel, *Anguilla acutirostris*.

In consequence of the time occupied in railway travelling and dining but little botanising was possible. The following are, however, the records of our botanists :—

Cross-leaved Heath, *Erica Tetralix*.
Fine-leaved Heath, ,, *cinerea*.
Ling (Heather), *Calluna vulgaris*.
Autumnal Gentian, *Gentiana Amarella*.
Bog Myrtle, *Myrica Gale*.
Eyebright, *Euphrasia officinalis*.
Meadow Cranesbill, *Geranium pratense*.
Mountain Thyme, *Thymus Serpyllum*.
Bird's-foot Trefoil, *Lotus corniculatus*.
Hairy Vetch, *Vicia hirsuta*.
Marsh Epilobe, *Epilobium palustre*.
Heath Galium, *Galium saxatile*.
Marsh Thistle, *Carduus palustris*.
Knapweed, *Centaura nigra*.
Autumn Hawkbit, *Leontodon autumnalis*.
Mouse-ear Hawkweed, *Hieracium Pilosella*.
Hare Bell, *Campanula rotundifolia*.
Forget-me-not, *Myosotis palustris*.
Figwort, *Scrophularia nodosa*.
Red Rattle, *Pedicularis palustris*.
Water Mint, *Mentha aquatica*.
Sorrel, *Rumex Acetosa*.
Common Polypody, *Polypodium vulgare*.
Hard Fern, *Blechnum Spicant*.

THE SIXTH and last Field Meeting was fixed for BOTHAL on the 14th of October. In the early morning rain fell freely, but by mid-day the skies had cleared. Reaching Morpeth by fast and slow mid-day trains about 1.30 p.m., a small

number of members gathered together, and the more detailed arrangements were made. Proceeding as far as the village, we turned to the right along the road leading to Pegswood. A heavy shower overtook us, and after sheltering for a short time under the trees we entered the Lady Chapel Wood by the side of the Wansbeck. The river, at all times beautiful, was enriched by the autumnal tints of some of the trees, which blending with the light and dark shades of the evergreens presented a picture of the softest and most harmonious kind, revealing every shade of the rainbow. The path in some places was rough, and the clayey soil moistened by the early morning rain had formed in places a very difficult foothold; and in other parts considerable departure had to be made from the regular road to avoid sinking over boot tops. Passing the railway viaduct, we reached an apparently newly-made well, over which there has been erected some pointed masonry, and an inscription about the Jubilee year of 1887. This inartistic construction much detracts from the beauty of its site. Soon we reached the Lady Chapel, built about the middle of the fifteenth century. Not much remains of this little structure of dressed freestone in the Perpendicular style. On the east side is the Lady Well, more in evidence as a boggy place than a well. Above it is an escutcheon cut out of the face of a sandstone rock. The light red clusters of the fruit of the Cuckoo-pint added great charm to the green undergrowth.

Nearing Bothal the old mill race, the weir, the river, and the tree covered banks afford a scene of tempting beauty to the artist. The village of Bothal appears to be almost entirely new, and built with great taste. The Castle is well situated and picturesque, though its beauty is much marred by the modern black chimney pots and smoke preventors which have been added. The original castle dates back to 1373, and though small, must have been a strongly fortified place. The present building, containing the best part of the old structure, being occupied by the agent of the estate, we did not care to disturb the privacy of the family by an application for an

internal view. Near to the Castle is the interesting church of St. Andrew, standing on the site of an old church which was destroyed in the Scottish raid, 1138. A fine Early English building took its place. This in its turn shared the same fate in 1147 at the hands of William the Lion, and the main part of the present church was then built. The west end had been built up, and was used as a sexton's lumber room. When it was opened out it appeared to have been a priest's chamber of two stories with a small door to the north. The present vestry takes its place; and the screen which cuts it off from the church is formed of the remains of the two earlier churches with this doorway as the entrance. Among the special objects in the church is a fine alabaster monument to Ralph, Lord Ogle, and his wife Margaret. He died in 1513. This monument is said to be the second finest tomb in Northumberland. The east end of the south aisle was at one time a chapel. There are the remains of a piscina, and there is a bracket, perhaps for the patron saint. In the chancel at the south-west there is an ancient window nearly on a level with the ground, probably not a leper window. It seems to have taken the place of a large opening, as in the middle of the wall was found some ancient stucco with a pattern in red lines, and there is a break in the masonry where the opening ended. The three sedilia are on the same level. On the north side of the chancel there is a small low door, the purpose of which is not evident. Built into the wall near the north-west window is the shaft of a Saxon cross with some tracery. Many remains of these Saxon crosses were found in the south wall of the chancel, which had to be taken down and rebuilt. They are now in the Black Gate Museum at Newcastle. Several fragments of the Norman zig-zag tracery are to be seen built into the walls of the church. The belfry has some remains of tracery, and there is an old sun dial on one of the buttresses. Two stone coffins of large size lie near the gate, and inside the church is one of very small size. I cannot venture into very full details of the venerable building, but those interested in the history of old Northumberland and its

families will with much profit pursue the subject further.

We then resumed our journey back to Morpeth, the silvery beams of the full moon glistening on the river. We reached Morpeth Station just in time to see the 6.11 p.m. train passing out. There being some time to wait for another fast train to Newcastle, we adjourned to the King's Head Hotel, where we were provided with the best meal that could be served on so short a notice. The members reached Newcastle about eight o'clock, much pleased with their afternoon's excursion, but resolving on another occasion the visit to this locality should be made earlier in the year. What interested us most was to observe so many plants flowering in a very much dwarfed manner, the blooms of which ought to have disappeared long weeks ago. Very few birds were noticed, those being merely the Redbreast, the Wren, and the Blackbird. An angler informed us he had just seen a Kingfisher flying past. Ferns, though abundant, were confined to the Common Bracken and the Male Fern. The following are the botanical notes we made on the way :—

Jagged-leaved Cranesbill, *Geranium dissectum.*
Herb Robert, ,, *Robertianum.*
Common Cow Wheat, *Melampyrum pratense.*
Wood Loose-strife, *Lysimachia nemorum.*
Devil's Bit, *Scabiosa succisa.*
Field Scabious, *Scabiosa arvensis.*
Small Bugloss, *Lycopsis arvensis.*
Red Campion, *Lychnis diurna.*
Wood Sage, *Teucrium Scorodonia.*
Cuckoo Pint, *Arum maculatum* (in fruit).
Pendulous Sedge, *Carex pendula.*
Common Rush, *Juncus communis.*
Jointed Rush, ,, *articulatus.*
Common Reed, *Arundo Phragmites.*
Small Nettle, *Urtica urens.*
Common Nettle, *Urtica dioica.*
Knotgrass, *Polygonum Aviculare.*
Climbing Buckwheat, *Polygonum Convolvulus.*
Common Persicaria, ,, *Persicaria.*
Red-veined Dock, *Rumex sanguineus.*
Curled Dock, ,, *crispus.*

Water Dock, *Rumex Hydrolapathum.*
Garden Orache, *Atriplex hortensis.*
White Goosefoot, *Chenopodium album.*
White Deadnettle, *Lamium album.*
Betony, *Stachys Betonica.*
Field Stachys, *Stachys arvensis.*
Hedge Stachys, ,, *sylvatica.*
Ground Ivy, *Nepeta Glechoma.*
Water Mint, *Mentha aquatica.*
Whorled Mint, *Mentha sativa.*
Round-leaved Mint, *Mentha rotundifolia.*
Water Figwort, *Scrophularia aquatica.*
Marsh Epilobe, *Epilobium palustre.*
Cinquefoil, *Potentilla reptans.*
Dwarf Mallow, *Malva rotundifolia.*
Creeping Watercress, *Nasturtium sylvestre.*
Field Poppy, *Papaver dubium.*
Toad Flax, *Linaria vulgaris.*
Forget-me-not, *Myosotis palustris.*
Heather, *Erica cinerea.*
Harebell, *Campanula rotundifolia.*
Umbellate Hawkweed, *Hieracium umbellatum.*
Mouse-ear Hawkweed, ,, *Pilosella.*
Common Sowthistle, *Sonchus oleraceus.*
Common Hawkbit, *Leontodon hispidus.*
Autumnal Hawkbit, ,, *autumnalis.*
Water Senecio, *Senecio aquaticus.*
Common Carrot, *Daucus Carota.*
Wild Angelic, *Angelica sylvestris.*
Male Shield Fern, *Aspidium Felix-mas.*
Lady Fern, ,, *Felix-fœmina.*

Evening Meetings.

In conjunction with the Natural History Society two Evening Meetings were held. The first on the 11th of November, 1902, your President in the chair, a lecture on "The Life and Death of Trees" was delivered by Professor M. C. Potter, M.A., with lantern illustrations. The lecturer sketched the growth of the young stem up to the fully formed timber, and then showed how various fungoid growths bring about the decay and death of the tree.

The second lecture was delivered on the 16th of December, 1902, your President again in the chair. The lecturer was Mr. E. P. Witten, B.Sc., and the subject "Deep Sea Life." The lecturer gave a brief account of the history of deep sea investigations, followed by a description of the main characteristics of deep sea animals, illustrating his points by means of lantern slides of typical forms.

I am glad to say both these meetings were exceedingly well attended, and the greatest interest was taken in the subject matters of the lectures.

Apart from the meetings of the Club, I paid a short ornithological visit to the coast and valleys of Cumberland; and the keeper again obligingly accompanied me over the nesting station at Ravenglass on the 17th of May, 1902. The boatman, on rowing me across, informed me that on the previous Sunday, in company with the village doctor, he had at the opposite side of the river seen a nest of the Ring Dotterel containing five eggs, one of them being very light in colour; and they had observed a number of young birds. I paid a visit myself to this part of the coast on the following Tuesday; but the only nest I saw was that of an Oyster Catcher containing three eggs, which from their feel evidently were quite fresh. The nest consisted of a circular depression in the sand, lined with a little dried grass and bents. On landing at the nesting colony we heard the Little Tern overhead, but it evidently had not commenced to nest. The keeper and the boatman (both of whom are evidently very careful observers of birds) stated that this year the Sandwich Terns had arrived at their nesting places on the 1st of April, whilst last year they first made their appearance on the 29th of March. The Little Terns had followed about a fortnight later, and the Common Terns another fortnight after the smaller birds. The period of nesting is pretty much in accordance with the times of the arrivals of the birds. We found the Sandwich Terns in four different places. The

"nests" were mere hollows in the sand, and contained one and two eggs. In one nest there were three, and in another there were four; but in the latter case the eggs must have been the produce of two birds, inasmuch as two eggs had been deposited in one day. The keeper had a list of the eggs so far laid, and these amounted together to 145. A few more might be laid, but probably not many. We noticed no exceptional markings on any of the eggs; in fact they were as plain a series as ever we saw. The Blackheaded Gull was as numerous as on the occasion of our last visit. The birds were like a cloud as they rose from their nests. It would have been difficult to count the number of these, but we had no reason to doubt the keeper's estimate of 80,000 pairs of birds as being fairly correct. The eggs were all in a high state of incubation, and many young birds were just hatched out; and some of them we watched coming out of their shells. A very short time appears to elapse from the bird emerging from the shell and its acquiring the instinctive capability of hiding itself. We noticed nothing remarkable in either the eggs or the nests. The latter varied considerably, some of them consisting only of a very slight foundation of dried grasses; others there were larger, and one we examined consisted of a large, well formed foundation of sticks about the size of the nest of the Rook. The cup at the top, formed of dried grasses and bents, was also much more perfect than usual.

We learnt this year the Sheldrake had not visited the estuary in anything like such large numbers as it had done in preceding years. A nest of the Wheatear containing six eggs had been seen in the morning shortly before our visit, and these birds appear to be fairly numerous. On our way back to the shore we saw two eggs of the Ring Dotterel deposited on the sand; and the keeper informed us that last year there had been at least fifty pairs nesting, but few eggs had been hatched in consequence of a very heavy gale which had caused the eggs to become covered with sand and deserted by the birds, who never seem to attempt to uncover the eggs again.

In one of the remote Cumberland valleys we found the Nightjar very numerous, but apparently it had not yet commenced to nest. The voice of the Cuckoo was heard in every direction. Wheatears flitted from almost every pile of stones, and the Grey Wagtail was numerous by the sides of all the streams. We accompanied one of the gamekeepers for some distance along the banks of a stream, and then we began a very steep ascent, principally over large and small blocks of stone which had fallen from the cliffs above. After a fatiguing walk and climb we reached the bottom of a perpendicular cliff, probably 60 or 70 feet high. About half way up on a ledge was the first nest of the Common Buzzard I have seen. It consisted of heather, and was about 1-ft. 5-in. across. In the cup lay two very large but exceedingly plain eggs almost without markings, and these were just about hatching. One of the shells was chipped, and the young bird would no doubt have emerged in an hour or two. Overhead the two parent birds circled, uttering their cries of distress, alarm and anger all blended. Noble looking birds they were, and I but wished I could have exercised some control over their fate. The keeper was there, however, as he considered, in the discharge of his duty, which was, as he termed it himself, to exterminate all birds "that didn't behave themselves." The birds, which had been shot at before unsuccessfully, had left the nest and soared too high in the air to enable him to shoot them ; but his mission was at the earliest possible opportunity to destroy both young and old birds, and I was helpless to interfere. From the keeper's own account I could not ascertain that even to the game preserver these birds ever did very much harm. An occasional young game bird is no doubt sometimes taken, but almost the whole of the food of the Buzzard is very similar to that of the Kestrel.

On Wednesday, the 25th of June, 1902, I paid a visit to the Farne Islands. I ascertained that the Water Hen had the previous year nested on the Islands. This I believe is the first occurrence of this bird as a nesting species. My visit

was somewhat hurried, and being in a large yacht, I only landed on a few of the Islands. On the Pinnacle or Staples Island I observed about the usual number of the Lesser Black-backed and Herring Gulls, but there were very few nests with the full number of eggs. I understood the eggs had been collected two or three different times, and that one of the objects of the Association was to decrease the Lesser Black-backed Gulls. It may be the Lesser Black-backed Gull is fully as numerous as it ought to be within this limited area; yet at the same time the reduction of its numbers is most likely to exterminate the Herring Gulls, which during my time always have been limited to a very few pairs. The watchers who take these eggs will tell you that they can distinguish which are the eggs of the Lesser Black-backed Gull and which are the eggs of the Herring Gull, but it is all nonsense. No skilled ornithologist can safely distinguish these eggs unless the bird be watched from the nest, or unless they are found in a locality where only Lesser Black-backed Gulls or Herring Gulls nest. The Rock Pipit I was told is now a very scarce bird on these Islands, and few nests have been seen. I enquired too about the Shags, and I was informed that this year two pairs of birds had visited the Islands, but I could not ascertain that they nested. On the Knoxes Arctic Terns were breaking their shells; but the eggs of the Sandwich Terns (earlier nesting birds) appeared for the most part to be freshly laid. The watchers assured me that no eggs had been taken; but in this they no doubt were mistaken, as the full number of eggs ought to have been found in each nest about the 17th of May.

The following note on the nesting of the House Martin may be of some little interest. The first nest built in the corner of a bedroom window at Roxbrough House, Warkworth, was unintentionally destroyed by a servant opening the window. The birds recommenced building on Thursday, the 24th of July, and they finished on Saturday, the 2nd of August, the second nest being in exactly the same place as that occupied by the first.

I watched the building of the nest with very much interest. The birds appeared to gather mud at the river, where it is to be found of a more clayey consistency than in most parts of Warkworth. This appeared to be taken into the crop and brought up again in considerable pieces when it was being attached to the nest.

When the nest was completed one bird remained in it during the day, but both appeared to occupy it during the night; and the first thing generally to be heard on waking in the morning was the cooing of the two birds. Lifting the window blind generally discovered both in the nest. During the day one bird appeared occupied in feeding the other. On the 21st of August the young birds apparently were hatched, as I found the shell of one of the eggs lying below the nest, from which it no doubt had been ejected by the parent birds. After this both birds were occupied in conveying food to the nest, their visits being very frequent, and sometimes at no greater interval than about a minute.

I unfortunately had to leave the house in the beginning of September before the young birds were on the wing, but I made the best arrangements I could for their preservation. The lateness of the nesting caused me some little fear that the birds would not be sufficiently strong on the wing by the period of migration; but the Indian summer which has been so conspicuous by contrast with the cold and damp of June, July, and August, will, I trust, have been instrumental in preserving for a greater length of time the food supplies of the birds; and I trust that these shortly will be returning again to Warkworth. These birds would be very plentiful in the village, but few hatch out their young, inasmuch as the nests are always built against a window, and the villagers attach more importance to the keeping clean of their windows than they do to watching with any interest the doings of the birds.

On the 29th of August the House Martins and Swallows were gathering in flocks. I could see or hear nothing of the Swifts, and thought they had gone; but the following morning I found a small number circling round the Castle.

The lateness of the season has been strikingly illustrated by the late appearance of so many of our wild flowers. At the end of August much of the hay is lying in the fields, and some of it only cut within a day or so. Oats have been much damaged by wind and rain. Some of the ears look as though they never would fill, and a very great part is mildewed. The flowers of the bramble are yet on the bushes, and in many cases the buds have not even opened. At this time of the year I have always been able to find some of the fruit perfectly ripe. Near Amble and Alnmouth the Starworts in flower are more numerous than I have ever seen them.

I addressed you at some length last year on the unnecessary and cruel destruction of many of our British birds. I was glad to observe a few days after that address was delivered, at a meeting of the Biological section of the Birmingham Natural History and Philosophical Society, Mr. Robert W. Chase, M.B.O.U., expressed the same views. The abolition of the poletrap is very much to be desired, as it destroys with torture every bird which alights upon it. I am glad to see that Lord Barnard has issued printed instructions to his agents and keepers for the abolition of this trap and the proper protection on his estate of many of our birds. I trust his example will be followed by other landowners. During my year of office the following additions have either been made to the list of our British birds or are under consideration :—

Guldenstadt's Redstart *(Rubicilla erythrogastra)* was with little doubt observed in Hampshire; but as the identification depends entirely upon one person the occurrence may not be considered to be sufficiently authenticated.

Yellow-billed Goose *(Anser arvensis)* has been added as a new species. This Goose is now recognised as being substantially distinct from the Bean Goose *(Anser segetum)* with which it has long been confused.

Greenish Willow Warbler *(Phylloscopus viridanus)*.—A fine adult male example was killed at the lantern of the Sule

Skerry Lighthouse on the night of the 5th September last, and was forwarded in the flesh to Sir William Eagle Clarke of the Edinburgh Museum by Mr. James Tomison, the keeper.

This eastern species has only once previously been known to occur in the British Isles, a female specimen having been obtained on the 5th September, 1896, by Mr. Caton Haigh on the north-east coast of Lincolnshire. The Scottish specimen is an unusually fine example, the wing measuring 2·6-in., and is in brilliant plumage, having just completed the moult. The figure of this species in Lord Lilford's "Coloured Illustrations" is not satisfactory. The figure in the supplement to Mr. Dresser's "Birds of Europe" (plate 651, fig. I.) is a little better, but the lower parts are too much washed with green. Its eggs are, I believe, unknown. The specimen is now in the collection at Edinburgh.

I regret the severance of the joint arrangement, suggested in the Committee of the Natural History Society, January 26th, 1864, adopted at the anniversary meeting of your Club, March 10th, 1864, and approved at a special general meeting of the members of the Natural History Society, April 6th, 1864. The terms of this arrangement will be found recorded in the Transactions of this Club for the years 1863–1864, Volume VI., page 268, and in the joint Natural History Transactions of the Club and the Society for the years 1890–1894, Volume XI., page 181. Under this arrangement the whole cost of the publication of the Transactions was in the first place defrayed by the Field Club. The members of the Field Club were numerous, their subscriptions were merely nominal, though in the whole they amounted to a substantial annual sum; and as it was unnecessary for them to consider monetary matters they took little interest in the income or expenditure. In consequence, however, of the formation of numerous other societies and clubs all over the district, your members, and consequently your subscriptions, decreased; and then your attention was directed to a consideration of the expenditure incurred in the publication of the Transactions.

Your secretaries were of opinion a large balance was due to your Club from the Natural History Society, and this was on several occasions named to them, but no satisfactory adjustment was ever made. I can attach no blame to either the Natural History Society or the Field Club; their arrangement was not intended to be a purely business transaction; but at the same time I regret a better record was not kept. The cost of printing the Transactions became a serious matter, and it appeared to your Committee that unless some change was made difficulties might arise. The question was brought before your Committee, and the majority of the members were in favour of the recession of the joint arrangement. I was opposed to this, and I was supported by Mr. Walker. After a lengthened discussion, it was agreed to recommend to your members that the Field Club should transfer the whole of its assets and liabilities to the Natural History Society, and that they should in future publish the joint transactions, the status of the Field Club in other respects remaining very much the same as before the joint arrangement; and it was resolved that a scheme should be sketched for the incorporation of the Club and the Society. A scheme was prepared and submitted. A meeting was held between the secretaries of the Society and the Club. Your propositions were not accepted by the secretaries of the Society as suitable to be submitted for confirmation, and they proposed another scheme which was brought before your last annual meeting. This you decided meant a most serious alteration in the constitution of your Club, and possibly its extinction, and it was determined that no course was open to you but to terminate the joint arrangement, which was done. Since then modified proposals have been approved by the committees of both societies, and these will later be submitted to you for your consideration.

The Natural History Transactions of Northumberland and Durham, the six volumes of the Transactions of your Club, and the joint Transactions in complete sets are becoming difficult to procure. I think therefore that now we are on the eve of a great change, for the benefit of those who have not

complete sets of the Transactions, I might for the purpose of ready reference in the library give some short detail of the history of your Club.

The parent of the Natural History Society was the Literary and Philosophical Society of Newcastle-upon-Tyne. A section of its members, desiring specially to devote themselves to the study of Natural History, formed a separate and distinct Society. From their Transactions it appears that their first officers were appointed for the years 1830–1831; and in the preface to the first volume of their Transactions, published in 1831, will be found a short account of the reasons why a distinct Society was formed. Two volumes of Transactions were published. In a similar manner members of the Natural History Society and others decided to form the Field Club. Your regulations were framed 25th April, 1846, and will be found in detail at the beginning of Volume I. of your Transactions, published in 1850. These regulations were slightly modified at the annual meeting held on April 10th, 1862, and will be found recorded at page 196, Volume V. of the Transactions, published in 1863. The rules of your Club were revised in 1864, and are printed in the 8th volume of the joint Transactions for the years 1884–1889, page 357. These regulations are now the authority by which your Society is governed.

The regulations appear very comprehensive and complete, and though possibly some additions to them may be deemed advisable to enlarge the scope of your operations, I feel perfectly sure the principles embodied will never be materially departed from. During the present year I have with great pleasure observed an awakening interest in the proceedings of your Club; and if other Field Clubs (and these are numerous) which have been formed could be induced t amalgamate, I think it would tend to the benefit of all, an would afford scope for the training of the younger naturalist on a scale which hitherto has not been attempted, and woul conduce to the advancement of that science in which we ar all so much interested.

In concluding what has already been a somewhat lengthy address, I cannot leave the chair without thanking you one and all for the kindly consideration I have received from you during a very pleasant year of office. My thanks are especially due to your honorary secretaries and treasurer, who on every occasion have done all that was possible to assist me in compiling your records and attending to your finances, and in the furtherance of the objects which we all have in view.

CASH ACCOUNT OF THE TYNESIDE NATURALISTS' FIELD CLUB

FOR THE YEAR ENDING 31ST DECEMBER, 1902.

1902.			£	s.	d.
Jan. 1.	To	Balance in hand	30	15	9
	,,	Subscriptions—			
,, 2.	,,	J. H. Straker	0	5	0
,, 21.	,,	Charities Central Collecting Agency—			
		J. Daglish £0 5 0			
		F. Emley 0 5 0			
		0 10 0			
	,,	Less Commission 0 0 3			
			0	9	9
Dec. 10.	,,	R. & T. Hindmarsh and Heppell as per list 28 10 0			
	,,	Less Commission, Postage, etc. 2 1 0			
			26	9	0
			57	19	6
1903.					
Jan. 1.	,,	Balance in hand	£32	9	6

N.B.—This statement makes no provision for liability in respect of cost of publishing Transactions beyond Vol. XIII., nor does it include the amount due from the Natural History Society for latter's proportion of the cost of Joint Transactions.

C. E. ROBSON,
HON. TREASURER.

1902.		£	s.	d.
Dec. 29.	By "Newcastle Journal" Account for Printing, Addressing, and Postage of Circulars, etc.	13	4	7
,, 31.	,, Honorary Secretaries' Expenses £5 4 9			
	Do. do. 7 0 8			
		12	5	5
,, 31.	,, Balance	32	9	6
		£57	19	6

March 31st, 1903.—Examined and found correct,
A. TRANAH, HON. AUDITOR.

Miscellanea.

Ballast Plants at Bradbury, Co. Durham.—On a railway siding near Bradbury Station may be seen in the months of July and August a paradise of wild flowers; for many yards the embankment is covered with such handsome flowers as the Tufted Vetch, the Meadow Geranium, Common Melilot (both yellow and white), and the Common Toadflax. The place, however, is chiefly interesting as furnishing a luxuriant growth of four rare plants; one indeed, the *Coronilla varia*, is now excluded from the British flora. This beautiful member of the Leguminosæ is growing in great profusion, and its elegant foliage and densely crowded racemes of large pale purple and cream coloured flowers are very striking. The most beautiful member of the group, another of the same Natural Order, is *Lathyrus tuberosus* (Pea Earth-nut); there are several beds of the plant; the flowers are large, deep crimson, and exhale a delightful perfume. It is said to occur rarely in Essex, and to have been introduced possibly by the Dutch in the 16th century. Still another of the leguminous plants is found in *Lathyrus sylvestris* (Narrow-leaved Everlasting Pea), remarkable for its winged stems. Lastly there is to be found a good growth of *Euphorbia Cyparissias* (Cypress Spurge) closely allied to *E. Esula* that grows on the walls of Hulne Abbey, Alnwick Park; this is also a very interesting and handsome plant. Whence came these (shall I say) strangers? The railway men say the ballast, of which the embankment consists, was brought from Tyne Dock some years ago, and doubtless these plants had been thus introduced.—*Edward Potts.*

Hooded Crow in May.—On the 12th of May, 1903, whilst nearing Beadnell on the Northumberland coast, I saw walking about in a field a bird which attracted my attention. I cautiously approached until I got sufficiently near to identify it beyond any question. I discovered it to be a Hooded Crow. Its presence here at this time of the year probably indicated it to be a nesting bird, and the record of its presence may be worth preserving.—*W. Mark Pybus.*

INDEX TO VOL. XIV.

PAGE

Baker, J. G., F.R.S., F.L.S. Biographical Notes on the Early Botanists of Northumberland and Durham ... 69
Ballast Plants at Bradbury, Co. Durham 283
Birds, general notes 202, 274
,, local notes 103, 118
,, of Ravenglass 196, 272
Botanists, early, of Northumberland and Durham 69
Brady, Prof. Geo. S., M.D., LL.D., F.R.S. On Copepoda and other Crustacea taken in Ireland and on the N.E. coast of England 54
Report on Dredging and other Marine Research off the N.E. coast of England in 1901 87
Note on *Neomenia carinata*? 102
,, *Echinoderes* 102

Claxheugh Section, Explanation of the 213
Crustacea taken in Ireland and on N.E. coast of England ... 87
,, of N.E. coast 91, 93

Dredging off the N.E. coast 87

Echinoderes 102
Evening Meetings 9, 32, 116, 130, 153, 195, 225, 271

Field Meetings :
1900.
Lanchester 105
Wooler 107
Wetheral 109
Embleton and Dunstanborough 111
Richmond 113
Morpeth and Mitford 115
1901.
Stanhope 169
Farne Islands 176
Otterburn 182
Whittingham 186
Gilsland 189
North Shields and Cullercoats 194

Field Meetings :
1902. PAGE
Castle Eden and Black Hall 241
Northumberland Lakes 246
Holy Island 251
Allendale and Staward 256
Holystone and Hepple 262
Bothal 267

Gill, E. Leonard, B.Sc. Local Notes on Birds, 1901–02 ... 103
Reports on Museum work 154, 227

Hancock Prize 2, 32, 129, 153, 223
Hooded Crow in May 283

Lebour, Miss M. V. List of Mollusca dredged 92

Meek, Alex., M.Sc. List of Amphipoda dredged 96

Natural History Society :
Annual Report, 1898 1
,, ,, 1899 29
,, ,, 1900 126
,, ,, 1901 151
,, ,, 1902 222
Neomenia carinata? 102

Potts, Edward, Ballast Plants at Bradbury, Co. Durham ... 283
Pybus, W. Mark, Birds of Ravenglass 196
Hooded Crow in May 283
Ornithological notes 202, 274
Presidential Address, 1902 169
Presidential Address, 1903 241

Thompson, Thos., Natural history reminiscences 117
Presidential Address, 1901 105
Tyneside Naturalists' Field Club :
Financial Statement, 1900 125
,, ,, 1901 210
,, ,, 1902 282
Presidential Address, 1901 105
,, ,, 1902 169
,, ,, 1903 241

Woolacott, D., M.Sc., F.G.S., An Explanation of the Claxheugh Section, Co. Durham 213

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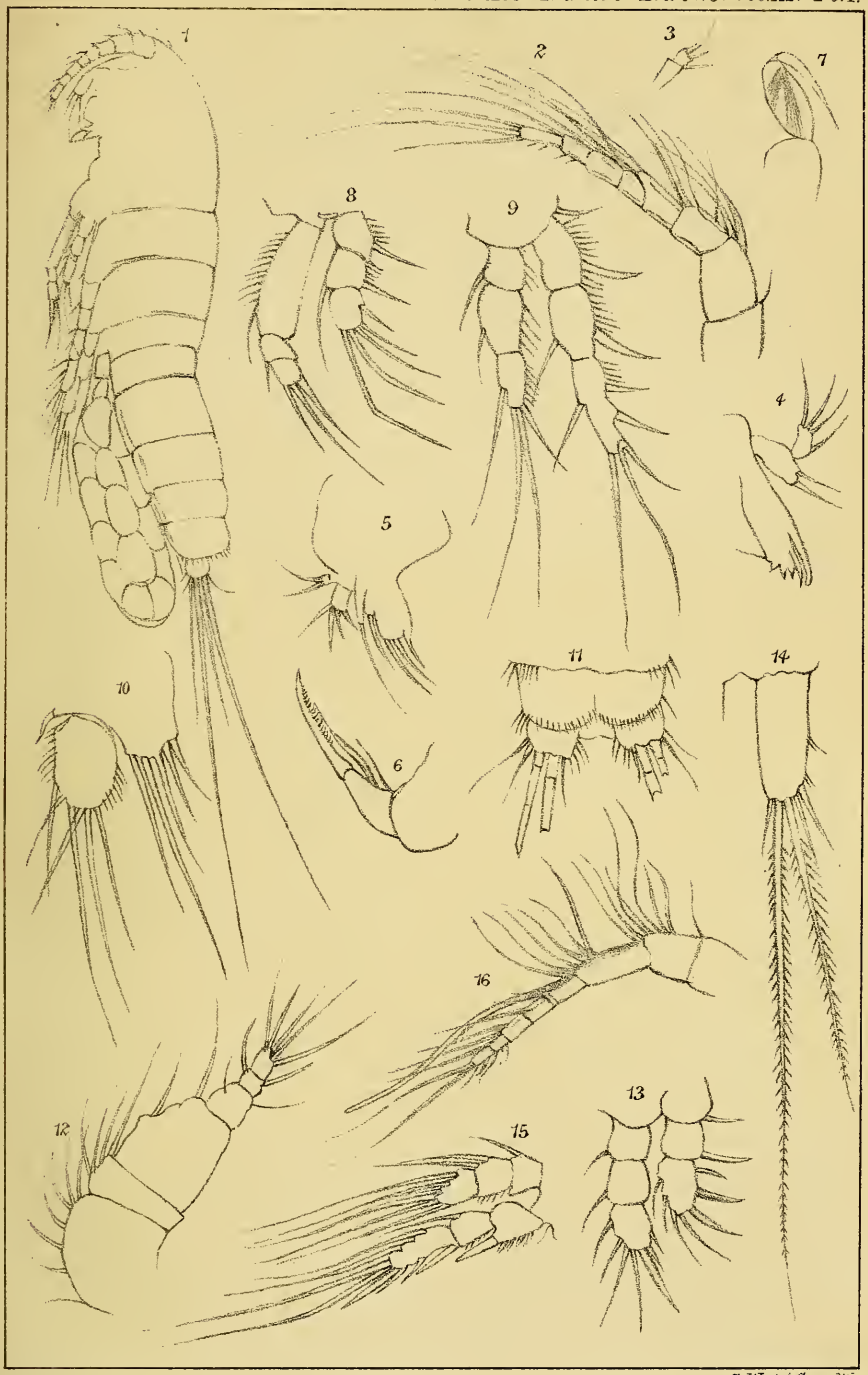

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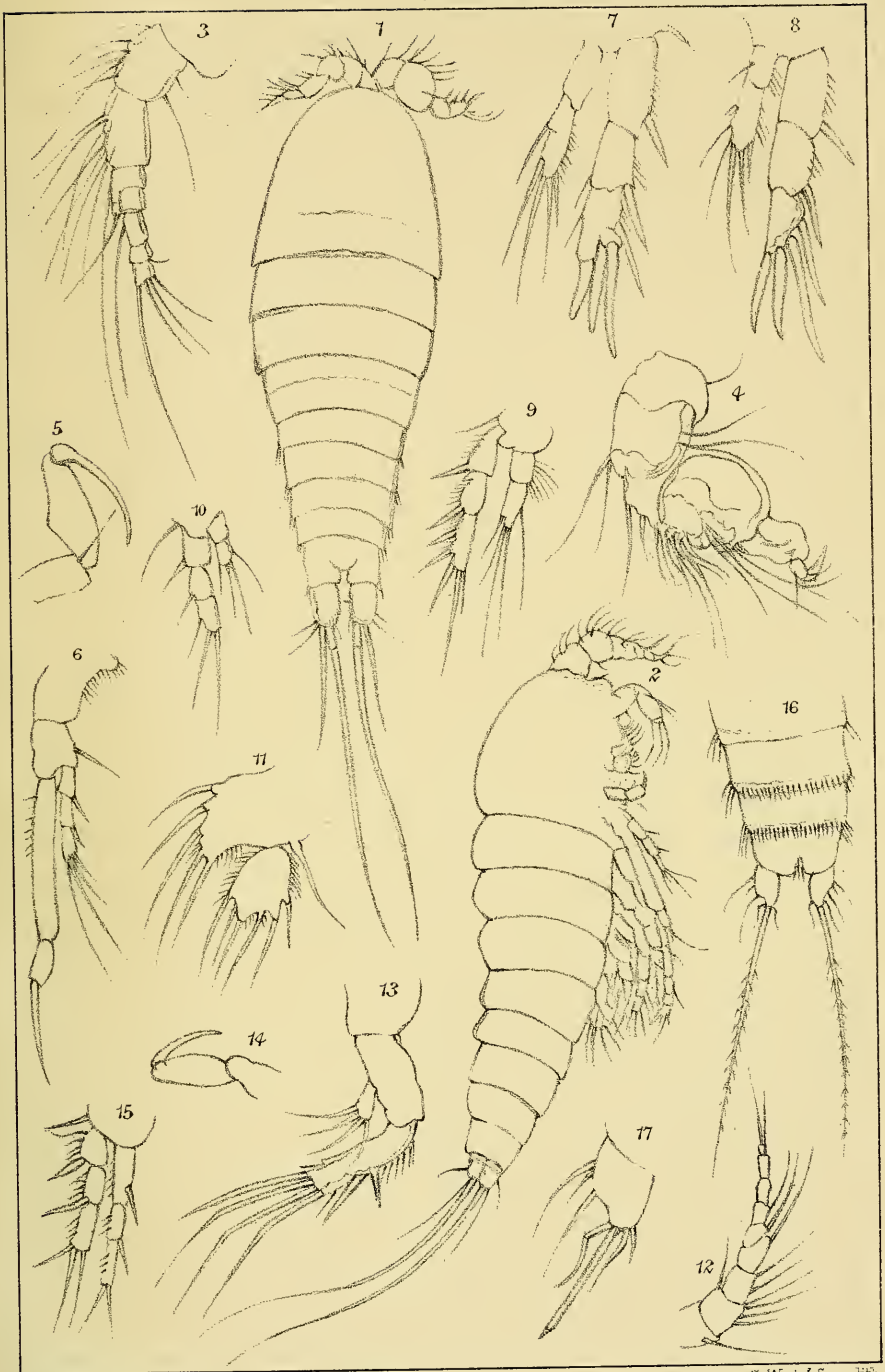
" 12–14 CYCLOPS EBORACENSIS ♀
" 15, 16 PSEUDOTHALESTRIS MONENSIS ♀.



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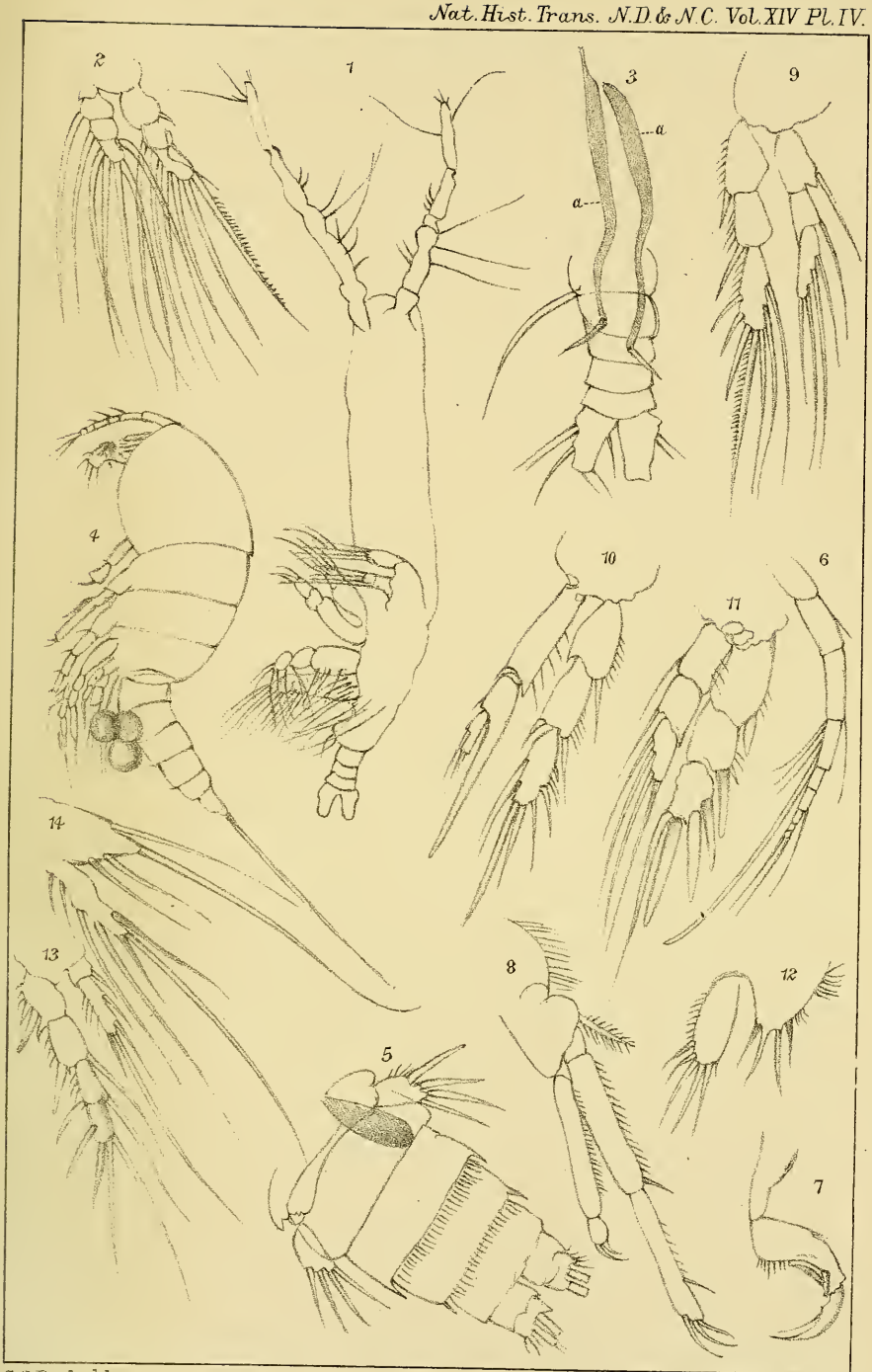

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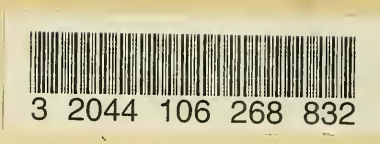
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